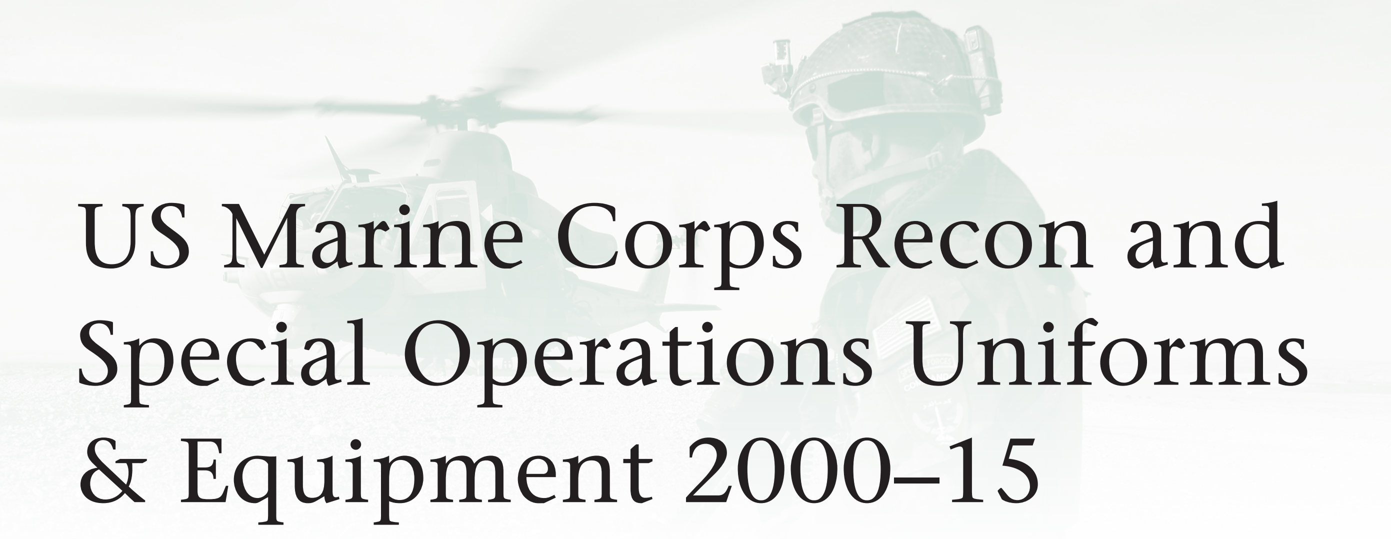

US Marine Corps Recon and Special Operations Uniforms & Equipment 2000–15

J. KENNETH EWARD

Author and illustrator

Kenneth Eward is a writer and illustrator whose military history projects have included assignments for *National Geographic* and *TIME*. He currently serves as board president of the Vietnam Helicopter Conservation League, a nonprofit organization dedicated to the preservation of Vietnam War-era military helicopters. Eward lives in the United States, on a farm which he and his wife share with border collies and Shetland sheep.

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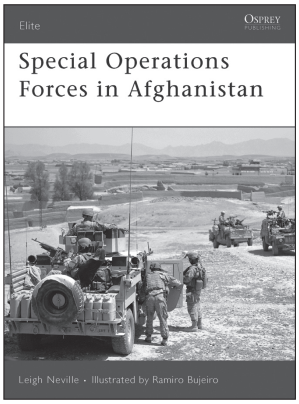
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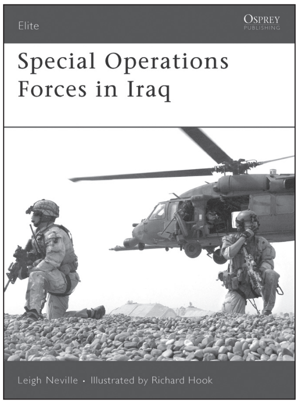
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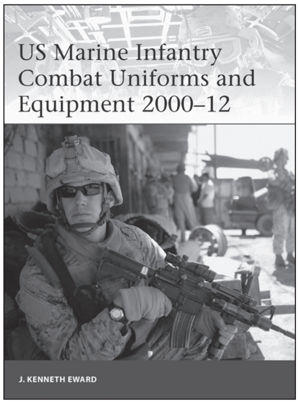
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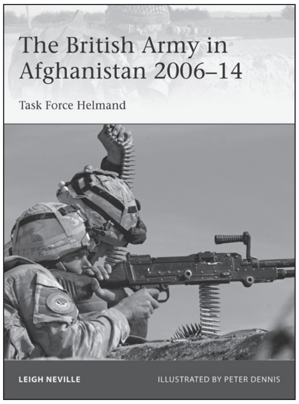
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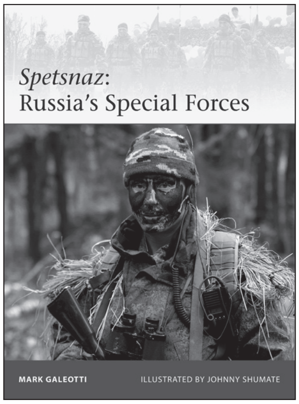
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J. KENNETH EWARD

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FRONT COVER Men of the 31st Marine Expeditionary Unit during a practice amphibious raid at the Kin Blue Beach Training Area on Okinawa, June 2013. (Cpl Codey Underwood/USMC)

TITLE PAGE Members of MARSOC Detachment One evaluating prototype second-generation FSBE combat equipment at Camp Pendleton, 2003. (Patrick A. Rogers)

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No author works in a vacuum; this book is a distillation of the knowledge and experiences of many involved in designing the equipment discussed in these pages, and of the end users who were kind enough to be interviewed. First, I would like to acknowledge those wishing to remain anonymous – you know who you are. This book could not have been completed without your help and I am profoundly grateful. Special thanks also go to Jon Laplume and Tom Little for talking about their contributions to the field as project officers, and to Rich Landry, Matt Johnson, C.J. Quinlan, John A. Dailey, Michael Golembesky, and Patrick A. Rogers for sharing from their own careers and photograph collections. It has been an education.

I also wish to express my thanks to the United States Marine Corps, US Army Soldier Systems Center-Natick and US Special Operations Command for their support of this project and the resources they put at my disposal. Special thanks go to Bobbie Cave at Marine Corps Systems Command, Capts Geraldine C. Carey, Eric D. Flanagan, Barry J. Morris and Binford Strickland in USMC public affairs; also to John D. Harlow at Natick, Capt Kevin G. Aandahl, USN, and Kenneth S. McGraw in SOCOM public affairs. Thanks are also due to Annette Amerman, Vincent J. Martinez and John P. Piedmont of the Marine Corps History Division for their help in locating persons and photographs; also to Charles G. Grow and Owen L. Conner at the National Museum of the Marine Corps. I am naturally also indebted to the USAF, USMC and USN photographers whose work is reproduced in this book.

The following companies and individuals have also made valuable contributions to this project: Alicia Riddle at ADS; Heather Russell at BAE Systems; John Taylor of CheyTac, David McCutcheon at CheyTac USA, the staff of Crye Associates; Benjamin Cummins; Kerri Dellisanti at Hayter Communications/MSR; Vance Jacobs; Adam Lauritson; Jordan Shanahan, Tim Gates, and Kent Orms at Mystery Ranch; Dennis Omanoff; Jacob Pintens; Irene Chung at Point Blank Enterprises; Vic Anti at Prairiefire; Lacey R. Ainsworth and Rhett C. Stansbury at SAIC; Scott Sand; Michael Dilts and Sarah Switlik at Switlik Parachute Company; Pierre-Emmanuel Vergote; Katie Ryan at VLTOR; and John Willis at SOE – thank you, all.

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AUTHOR'S NOTE

This book is a companion to *US Marine Infantry Combat Uniforms and Equipment 2000–12* (Elite 190), and, like that book, focuses on individual kit – things that can be worn or carried. Official programs are described in detail along with the more important non-standard items, but the author has not attempted the impossible task of cataloging the immense range of commercial items acquired through individual and unit purchases.

A word about **USMC acronyms** is appropriate here. Acronyms are generally spoken phonetically by Marines – as words. In this text casual use of jargon has been kept to a minimum, but acronyms are unavoidable. To complicate matters, successive equipment programs may be lumped together under a single rubric, as is the case with Full Spectrum Battle Equipment (FSBE); making matters worse, sometimes a single program is popularly known by multiple acronyms, or two unrelated programs share the same acronym. The reader has been warned. A glossary is provided at the end of the book; readers seeking additional guidance are directed to the *Department of Defense Dictionary of Military and Associated Terms* (Publication JP 1-02), and *Marine Corps Supplement to the Department of Defense Dictionary of Military and Associated Terms* (Publication MCRP 5-12C), both of which are available to the public in electronic format online.

While receiving support from the USMC and SOCOM, this is an independent work and does not necessarily reflect official views and policies. As is so often the case, not all the sources – a combination of official documents, independent publications and personal interviews – agree on every point. I have done my best to weigh the information and set forth the record objectively; the conclusions reached in this book and the opinions expressed, as well as any interpretive faults, are wholly my own.

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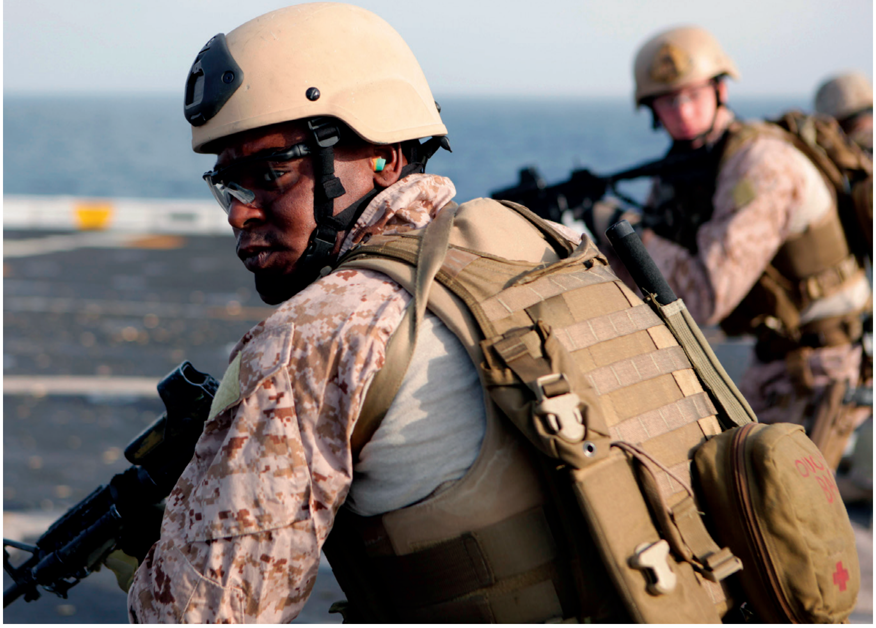
US MARINE CORPS RECON AND SPECIAL OPERATIONS UNIFORMS & EQUIPMENT 2000–15

INTRODUCTION

To Marines of the 1st Reconnaissance Battalion, deployed to Trek Nawa in the contested Helmand Province of Afghanistan in the spring of 2010 – the ninth year of the ISAF-led war against the Taliban – nicknames were a routine part of military life; but the term “Black Diamonds” was something new. Overheard in an enemy radio intercept that apparently referred to them, the new handle was immediately understood. These reconnaissance Marines wore, attached to the front of their helmets, a large, curved fairing for mounting night vision goggles. Shaped like a baseball diamond and jet black in color, this “NVG shroud” was visible at a distance against the desert-camouflaged helmet cover. It was at that time the most conspicuous item of Marine specialist kit, immediately distinguishing reconnaissance and special-operations troops from conventional infantry. Much as “Green Beret” had become synonymous with US Army Special Forces, so too – at least to their Taliban adversaries – had “Black Diamond” come to define the élite Marine recon and special-ops forces wearing it.



Radio reconnaissance Marines of the 13th MEU undergo weapons training in April 2011, wearing Generation II FSBE and MIAK gear. In the foreground, note the MICH helmet with its “black diamond” NVG shroud; this was often painted in the field to better match the surrounding environment, and the current issue is manufactured in desert tan. Note also the combination of the MBSS back plate carrier worn over a low-visibility armor vest. Several FSBE pouches and a MIAK telescoping self-defense baton are carried on the back of the plate carrier. The contrast between the Desert MARPAT sleeves and collar and the plain tan fabric body identifies the combat shirt as the FROG flame-resistant type. (Cpl Christopher O’Quin/USMC)

Modern advances in equipment design

American specialist troops look quite different from line infantry because of distinctive sets of equipment developed for their particular needs. This is despite the best efforts of parent services to provide a useful set of common equipment for all ground troops. In fact, the changes to the equipment of both specialist and regular forces alike have accelerated at an unparalleled rate in the past two decades because of advances in relevant technologies and design, resulting in a radical departure in the appearance and capabilities of combat troops from what had been the norm through much of the latter half of the 20th century. Many of the recent advances have been fueled by military spending during the "long war" in Iraq and Afghanistan, but they actually originated in work by the commercial sector and military design boards of the 1990s.

Technology and design do not advance uniformly, but in fits and starts through a process of "connections," as popularized by technology historian James Burke. A convergence of ideas from different technological disciplines will act as a trigger, sparking a new idea with broad enough implications to significantly advance the state of art. In its wake, a number of smaller, more immediately practical innovations will inevitably follow, sometimes themselves sparking ideas for yet other breakthroughs.

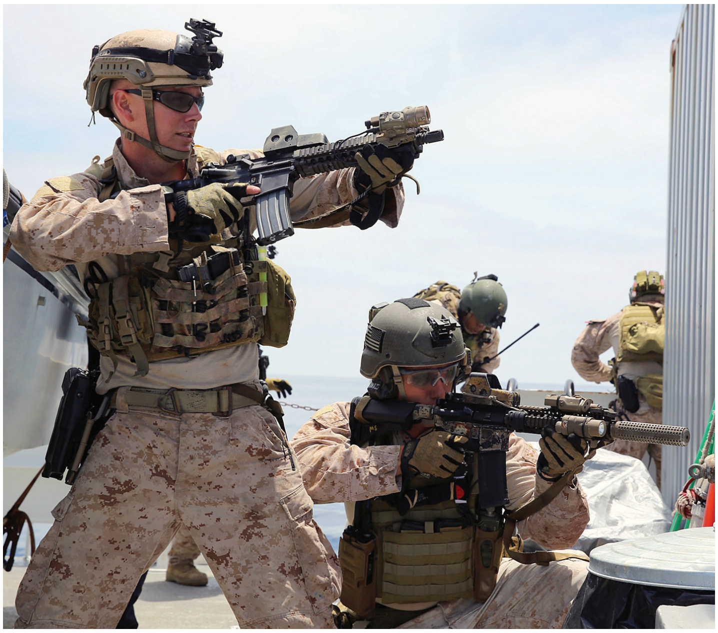
Two examples of recent watershed innovations in military individual equipment that started in this way are the Pouch Attachment Ladder System (PALS), and the Military Standard 1913 (Mil-Std-1913) rail. Both are modular fastener systems developed in the 1990s, and both represent ingenious application of old ideas to new purposes. When PALS was introduced in the late 1990s it created a new universal modular system for connecting pouches, vests, and body armor that quickly spread throughout the US military through programs such as MOLLE, and was soon adopted by armies around the world. Almost overnight, PALS changed the way that the soldier's equipment is carried.

The Mil-Std-1913 rail, developed to US Special Operations Command specifications to improve the 1940s-era Weaver rifle-scope rail, has had a similar effect on military small arms. The convergence of this rail with innovations in compact optics and electronics that can be attached to it has resulted in modern weapons of unprecedented targeting capabilities and effectiveness, even though the basic designs of the weapons to which the rails are attached are often more than half a century old. Moreover, the addition of such rails to helmets allows similar optical and electronic devices to be mounted adjacent to the eye, and recently work on wireless links has married these directly to the weapon sights.

Reconnaissance and special-ops Marines take a keen interest in technology as a means to enhance their fieldcraft and improve survival. To such personnel, field gear that has traditionally been despised as a mere burden takes on additional significance because of the unique nature of their missions: as small, outnumbered forces, often inserted deep behind enemy lines, far from support or resupply and risking annihilation if discovered. In consequence, Special Operations Forces develop a very close interest in the improvement of gear on which the success of their mission and their very lives may depend. They have a disproportionately large share of design influence on military gear – initially their own, but ultimately throughout the conventional military as well.

The rationale: special equipments for special forces

Many have questioned the utility of designing separate equipment for specialist and conventional forces, as redundant and as a waste of resources. It is a question easily answered.



MARSOC operators undergoing VBSS training in May 2013 carry Mk 18 Mod 0 (Block II) carbines, and are a study in gear diversity – standard issue and otherwise. The Marine at left wears a TC-2001 MICH helmet equipped with Ops-Core suspension and ARC rails. (Staff Sgt Robert M. Storm/USMC)

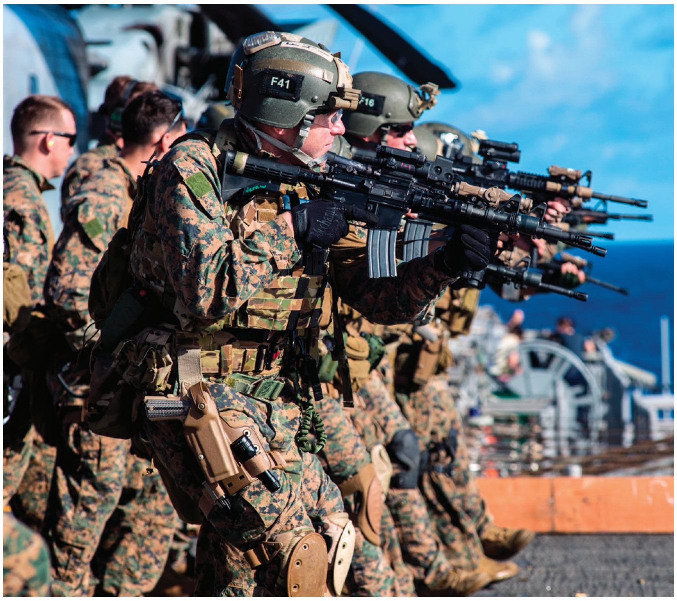
A number of tradeoffs and design compromises are inevitably necessary in the design of field gear. For example, light materials save weight, reducing fatigue and increasing mobility for SOF, who may be in the field for 90 days or less; but they are less durable, and thus unsuitable for infantry battalions which have a deployment cycle of 6 months or more. Multipurpose pouches can save costs and increase utility, but may sacrifice fit and usefulness; grommets in web pouches allow water to drain out, but admit fine grit that can enter magazines and foul a weapon's action. Cutaway helmets and slim-profile body armor increase situational awareness and enhance mobility, respectively, but they also decrease areas of protection. Carbine-length weapons are superior in confined spaces but, lacking the range and punch of full-length rifles, they may be outmatched in conventional battles.

Even small differences in the parameters of projected missions have a bearing on the design of equipment to support them. For instance, consider the choice of fasteners for web equipment. Velcro is quick but noisy, and does not hold together well in seawater or on wet beaches – so it is good for some types of close-quarter assaults, but a poor choice for stealth or for amphibious raids. Snaps are more secure, but foul easily in sand and grit, and are also noisy. Plastic Fastex buckles are a secure means of closing a pouch or rucksack, especially for an aerial or amphibious insertion, but cannot be unfastened as quickly as Velcro or snaps – and they can clatter against a weapon or other equipment. There's a place for each type of fastener, but no one type is good for everything. For fasteners, as for all combat gear, the key is to strike the proper balance appropriate to the mission.

This is the fundamental reason for fielding unique special-operations gear, and reflects the careful planning that goes into its design. USMC specialist gear is developed at the Reconnaissance & Amphibious Raids and the Infantry Combat Equipment program offices of Marine Corps Systems Command at Marine Corps Base Quantico, Virginia. A close relationship with US Army and US Special Operations Command developmental programs exists through the US Army Natick Soldier Research, Development & Engineering Center in Massachusetts – particularly at its Special Operations Forces Survival, Support & Equipment Systems office.

Once equipment is in the hands of the specialists it may still be subject to modification: uniforms and web gear are often sent to local "sew shops" for personalization. Olive drab "100mph" tape is used liberally, particularly by recon Marines, to secure items, to provide a measure of camouflage and a better grip, to muffle unwanted sound, or simply to hold things together. Zip-ties and Flex cuffs also perform many similar jury-rigging functions, even on occasion substituting for weapon sling swivels.

THE TASKS



Clothed in Woodland MARPAT, these Force Recon Marines from the 31st MEU wear a mix of standard and commercial equipment in this June 2013 photo. The central man is equipped with a TYR PICO Assaulter's Plate Carrier and Brokos belt, in place of standard Gen II FSBE and MIAK equivalents. (MC2 (SW/AW) Andrew B. Church/USN)

Modern Marine Corps reconnaissance units are divided into division reconnaissance battalions (also known as recon battalions), and force reconnaissance companies (Force Recon) – a division of labor established during a 1957 reorganization of the Fleet Marine Forces. The division recon battalions, one per Marine division, provide proximate ground and amphibious reconnaissance to the ground combat element commander. The force reconnaissance company provides deep reconnaissance, usually defined as beyond artillery range, to the commander of the overarching Marine Air-Ground Task Force (MAGTF).

The MAGTF is a scalable force, including not only the command and ground combat elements but also air assets and logistics support. In 1985–86, with the addition of the "Special Operations Capable" certification process and a new mission set for the Marine Amphibious Units (MAUs – one type of MAGTF with which recon Marines deployed), Force Recon companies and, to a lesser extent, the recon battalions assumed a number of special operations responsibilities. The SOC program was born of a Marine reluctance to participate in the new US Special Operations Command (SOCOM) that was then being organized. USMC leadership did not want to hand over control of some of its most capable personnel to SOCOM, preferring to field its own *"in-extremis"* forces.

The establishment of direct-action platoons in the Force Recon companies was the result of the SOC program. The entire MAU(SOC) now took on something of a specialist aspect; even its battalion landing team, a specially trained but conventional infantry battalion, could be called upon to perform or support special operations of several kinds. Although the addition of the new SOC program formalized a special-warfare component to the USMC, Marines would argue that this has always been an existential quality of the Corps, and history would probably agree.[1]

Following the September 11, 2001 terror attacks on New York and Washington, DC, many in Washington argued for direct participation by the Marine Corps in SOCOM, to address a shortage in manpower for future antiterrorism and combat operations. Secretary of Defense Donald Rumsfeld brokered this integration. The Marine Corps US Special Operations Command Detachment, or "Det One", was established in 2003 as a testbed to establish a working relationship between the Marine Corps and SOCOM. This experience was invaluable in the establishment of Marine Corps Special Operations Command (MARSOC) in 2006. In June 2015, following intense lobbying and a little skulduggery, MARSOC's so-called "critical skills

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[1] Shortly afterwards, in 1988, Marine Amphibious Units were renamed Marine Expeditionary Units – a name more inclusive of the combined air, ground and maritime facets of Marine Corps operations; consequently, the MAU(SOC) became the MEU(SOC).

operators" were rebranded Marine Raiders, taking on the mantle of the famed Marine Raider battalions of World War II. MARSOC's capabilities, sharing a great deal of overlap with Force Recon, include direct-action missions, reconnaissance, counterterrorism, and foreign internal defense, amongst others. Recon and MARSOC teams are normally accompanied by a Special Amphibious Reconnaissance Corpsman (SARC). SARCs are naval medical personnel who have undergone additional training beyond that of the corpsmen assigned to conventional infantry units.

Since the creation of US Marine Corps Special Operations Command (MARSOC) as a component of US Special Operations Command (SOCOM) in 2006, many of its "critical skills operators" have worn the Raider patch in combat in homage to the Raider battalions of World War II. Following a 2015 directive, MARSOC Marines have since officially been named Raiders. Unit and "morale" patches are not officially sanctioned on field uniforms, but have been popular in some units deployed to Iraq and Afghanistan; Velcro attachment makes them quick to remove when necessary. (Level Zero Heroes)

CAMOUFLAGE & FIELD CLOTHING

Camouflage patterns and practice

(More detailed explanations and illustrations will be found in the author's Elite 190, *US Marine Infantry Combat Uniforms and Equipment 2000–12*.)

When used in military clothing camouflage has a second purpose, seemingly at odds with the primary goal of concealment: to allow easy recognition of friendly from enemy forces through the uniform appearance of a body of troops. This secondary purpose was in fact the rationale behind the development of the Marine Pattern (MARPAT) series of tessellated camouflage patterns in use throughout the Corps today. Commandant of the Marine Corps James L. Jones commissioned the development of MARPAT for a new 21st-century Marine Corps Combat Utility Uniform (MCCUU) to give Marines a distinctive look, setting them apart from troops of the other armed services with whom they had shared a common field uniform. This was motivated by the traditionally strong organizational pride of the Marine Corps – a desire to stand apart, and in combat (in the words of a Marine spokesman) to "be instantly recognized as a force to be reckoned with." However, unlike some other service-specific patterns, MARPAT was the product of meticulous attention to the fundamental purpose of environmental concealment. The new temperate and arid MARPAT patterns, modeled after the Canadian CADPAT, were a marked improvement over the previous Woodland and tricolor Desert camouflage patterns in the visible and near-IR spectra. They soon became

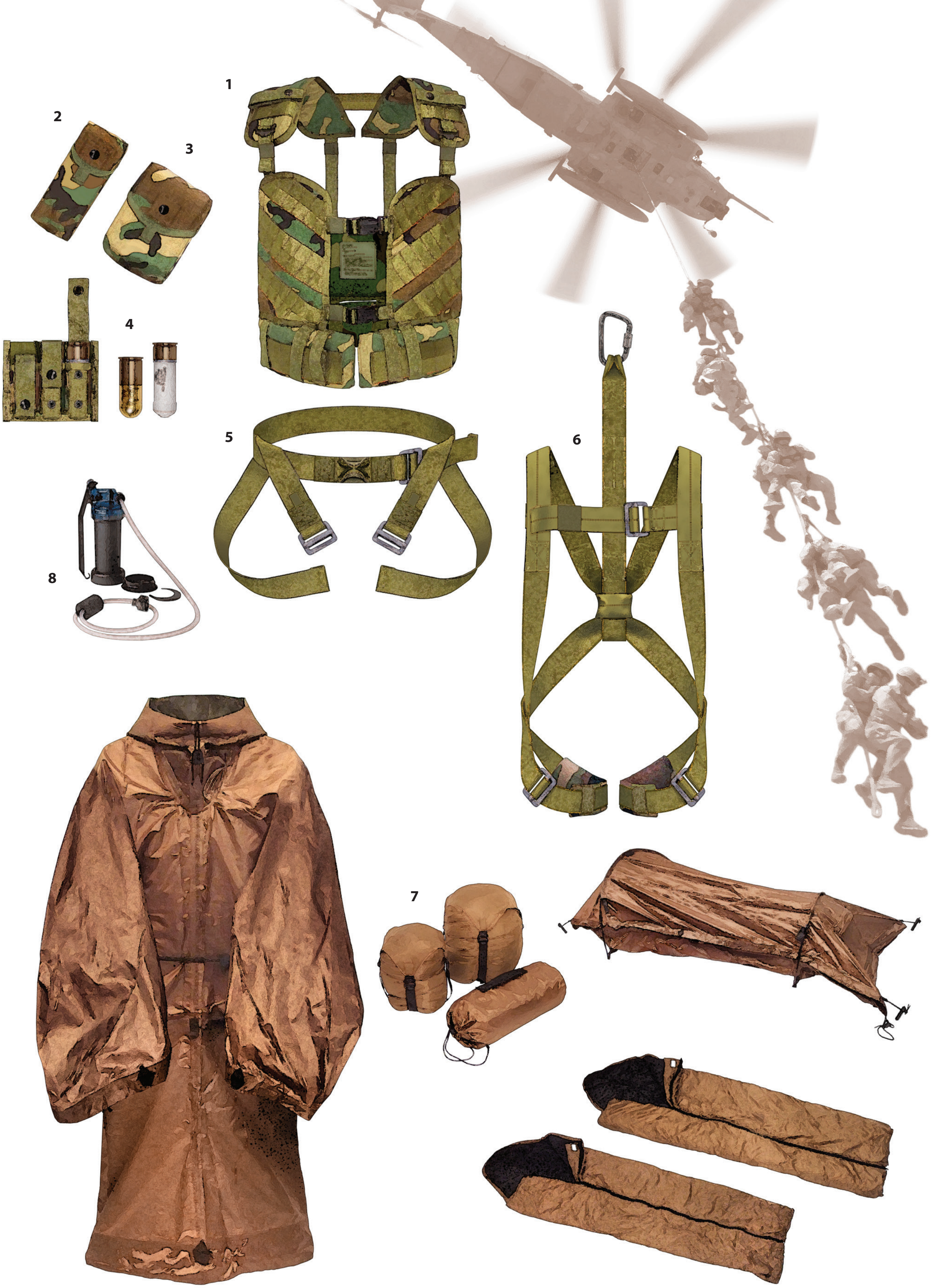
A RECONNAISSANCE, PATROLLING, INSERTION & EXTRACTION EQUIPMENT

The mid-1990s RPIE program introduced several new items for recon Marines in support of "green-side" missions, with an emphasis on lightening the individual's load. These included the LBE/SPIE System (a kit combining load-bearing and rope suspension equipment); the Multipurpose Poncho System (MPPS); a Team Water Purification Filter (TWPS); and a Boat Safety Kit (outside the scope of this book.)

The load-carriage portion of the LBE/SPIE comprised a modular ALICE-compatible vest **(1)**, and three new pouches: a small utility pouch generally used to carry M16 magazines **(2)**; a medium pouch for e.g. SAW ammunition and 40mm rounds **(3)**; and a triple 40mm grenade carrier capable of holding both HE grenades and the longer illumination rounds **(4)**. The insertion/extraction kit included a rappel seat **(5)** that could be integrated with the vest, and a lightweight SPIE harness **(6)**.

The MPSS **(7)** was a versatile lightweight shelter made by Ecotat, procured under different names by different branches of the armed services, that combined a shelter kit with temperate and cold-weather liners/sleeping bags. The MPPS could be worn as a waterproof hooded greatcoat (lined or unlined); reconfigured into several types of single-person shelter; or used as an open-air sleeping bag. The Marine version was procured in a chocolate brown color (slightly darker than modern coyote brown), to blend reasonably well with a range of environments.

The TWPS **(8)** provided an alternative to carrying large quantities of water on missions in areas with potentially unsafe water sources.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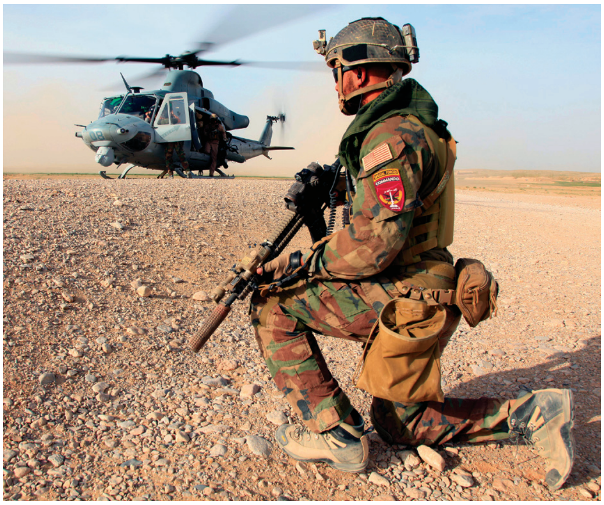

Camouflage sometimes serves to mask national identity. This MARSOC Marine, serving as an advisor in Helmand Province, Afghanistan, in 2012, wears a uniform in the older US Woodland pattern. Since this had been supplied to Afghan National Army troops, it helped advisors to avoid undue attention from Taliban snipers, and to reduce the threat of "friendly fire". MARSOC and ANGLICO Marines, who very often work with foreign armies, frequently follow this practice. (Cpl Kyle McNally/USMC)

known as Woodland and Desert MARPAT, and were soon followed by Snow MARPAT for winter use in temperate and polar climate zones.

In the matter of web gear, the older olive green of the ALICE era blended well with uniform and environment in temperate climates, but stuck out like a sore thumb against the desert uniform. A new brownish color with visual properties intermediate to the new Woodland and Desert versions of MARPAT, Coyote Brown 498, was chosen to replace olive green. Coyote brown is not specialized for a particular environment, but maintains reasonable effectiveness throughout a broad range of environments, or in the Marine phrase "every clime and place." The choice of a brownish color reflects many years of thought and experimentation, and equipment had been procured for reconnaissance Marines in similar colors even in the early 1990s, over a decade before coyote brown became the new standard.

Several solid colors are used by recon and special-ops troops to varying degrees. Especially common shades for specialist web equipment are khaki, and ranger green (a dull olive green), originating in SOCOM equipment programs of the early 2000s[2]. Other solid colors relevant to this study, among the wide range in use by the various US armed services, are the sage green and tan used in flame-resistant flight suits often worn by specialist troops for close combat, and the palette of commercially-defined dark earth tones found on the metallic and plastic components of weapons and other equipment. Alpha green is a grayish-green similar to sage, used on some SOCOM clothing as an effective camouflage at higher elevations in mountainous regions.

Although MARPAT is the only camouflage pattern authorized by the Marine Corps, recon personnel, and to a greater extent MARSOC, have purchased a number of web equipment items in MultiCam. In its revised multispectral form MultiCam is found on many commercial and (non-Marine) military items of equipment. It is especially popular for body armor and load-carrying equipment in parts of Afghanistan, where it conceals the large surfaces presented by a body-armor vest far better than could a solid color. Bits of several other patterns are seen amongst recon and special-ops Marines here and there (far more than would be tolerated amongst conventional troops): commercial Mossy Oak and A-TACS patterns, Army UCP, and the occasional item in Australian Disruptive Camouflage Pattern, or other foreign items typically received in trade on a joint exercise. Improvisational camouflage patterns are also important, typically including patterns spray- or hand-painted on weapons, helmets, and web equipment. Even improvised camouflage for clothing has been created on more than one occasion: recent examples include recon Marines utilizing arctic overwhites as a canvas to create specialized local camouflage, and British troops in Afghanistan dyeing issued desert camouflage uniforms greener the better to match the foliage of the heavily overgrown "green zone" along the Helmand River.

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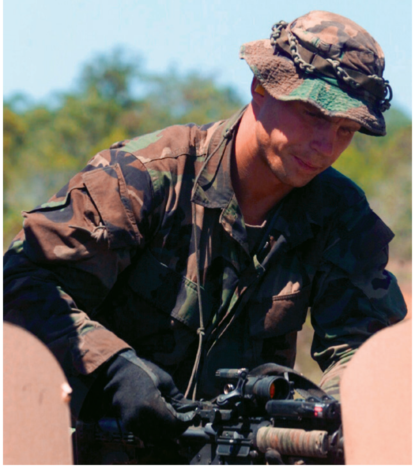
[2] The shade of khaki in current use was inspired by Olive Drab No.3, adopted by the US military early in World War II. While that shade was poorly suited to the predominantly green landscapes of the Pacific and European Theaters of War, prompting its replacement with the greener OD No. 7, the modern khaki has proved suitably inconspicuous in the arid environments where America's recent wars have been fought. It is popularly known as "Matt Johnson Khaki" or MJK, after the designer at Eagle Industries (a veteran of 1st Force Recon Co) who incorporated it into MLCS and other special-ops web equipment.



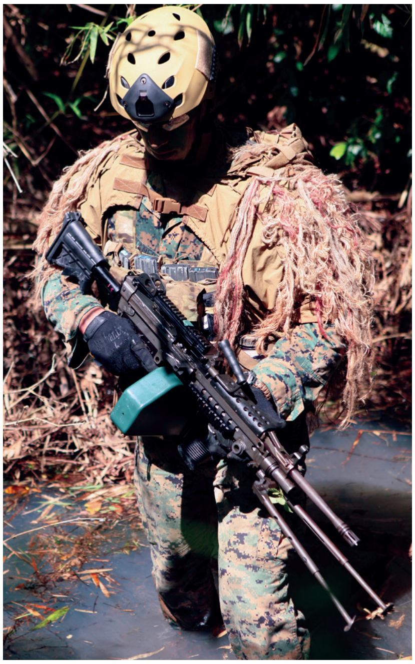
Patrol clothing for Marine recon units changed little from the 1980s through the early 2000s. Standard camouflage uniforms were worn, sometimes with pockets relocated to the upper arm for ease of access when prone. Hat brims are frequently shortened to minimize visual and acoustic interference. Recon personnel, such as this Marine photographed in 2003 wearing Woodland camouflage, usually carry a spare length or two of paracord for emergencies; the foliage loops of the hat, and the sleeve pockets, are convenient places to keep them. (Lance Cpl James P. Douglas/USMC)

Field attire

The Marine Corps has completely revamped its combat clothing in the course of the past decade. Prior to the arrival of the MARPAT MCCUU, recon Marines modified their utility uniform coats by relocating waist pockets to the breast, and breast pockets to upper sleeves for ease of access. These modifications and other improvements were incorporated into the new MCCUU utilities (see Elite 190). Floppy hats – known either as "boonie" or "bush covers" – were and still are typical headgear for reconnaissance missions. In the past, Recon Marines typically shortened the brim to improve peripheral vision and hearing, but since the hats designed for the MARPAT utilities have a shorter brim this practice is now less common.

In addition to the standard uniforms worn throughout the USMC, Force Recon has worn flame-resistant combat uniforms for direct-action missions since the mid-1980s, to mitigate the effects of flash, fire and explosions in confined spaces. Initial clothing included the standard CWU-27/P aircrew coveralls, and a flame-resistant Nomex Assault Suit designed in the mid-1990s (see next chapter). In the early 2000s, Force Recon adopted for patrolling a two-piece combat uniform by Crye Precision. Though not flame-resistant, this was tailored for a better fit underneath body armor and equipment, and included a unique jersey-style torso panel for improved comfort. It was not long before a flame-resistant version appeared, which could be used for both reconnaissance missions and in combat. This uniform became the basis for the outer layer of the 2007 Flame Resistant Organizational Gear (FROG) combat ensemble issued to all deployed USMC ground forces, including Force Recon.

In 2013 an improved FROG was developed. Called the Enhanced Flame Resistant Combat Ensemble (EFRCE), the new uniforms are intended to be more rugged and more comfortable than FROG, and are scheduled to be fielded in 2015. Some flame-resistant Crye combat



The ability to blend with the local environment can be improved with dimensional camouflage, such as this USMC-issue ghillie mantle worn by a Force Recon Marine on patrol in 2011. The camouflage instruction given to modern scout snipers differs little from the methods perfected during World War I. Dimensional camouflage typically involves a selection of natural materials from one's immediate environment, tucked into foliage-loops on headgear and elsewhere to break up the wearer's outline. While on reconnaissance, Marines will replace these materials as they move to a new location to ensure that they continue to have suitable concealment. Perhaps the ultimate expression of dimensional camouflage is the ghillie suit, a shapeless assembly of burlap, string and foliage first popularized in military use in 1915 by sniper-instructors of the Lovat Scouts, a British Army unit recruited from Scottish ghillies (gamekeepers) and deerstalkers. (Lance Cpl David J. Adams/USMC) suits are still worn by Force Recon and MARSOC; other flame-resistant combat clothing worn by deployed MARSOC personnel is discussed below.

In addition to the new MCCUUs, clothing for inclement weather has been updated with the introduction of the All-Purpose Environmental Clothing System (APECS) and Mountain/Cold Weather Clothing System (MCWCS); incorporating new materials and minor changes in tailoring, these together replaced the Extended Cold Weather Clothing System (ECWCS) of the 1980s-'90s. An additional set of bad-weather gear has been introduced for SOF attached to Special Operations Command, including MARSOC, and is also provided to reconnaissance Marines through the Parachute Individual Equipment Kit (see below, under "Insertion & Extraction Equipment"). The USMC special-ops test unit Detachment One also received the Protective Combat Uniform from Natick upon their establishment in 2003. The PCU was conceived as a 15-piece, 7-layer ensemble of lightweight synthetic clothing intended for a variety of bad-weather environments. Developed in 2002 by the US Army Soldier Systems Center at Natick, with input from the various SOCOM components and from the USMC Force Recon companies, the PCU was fielded in its initial Block 0 configuration in 2003, and updated with modifications as Blocks 1 and 2 in 2006 and 2012.

The standard jungle boots and black combat boot of earlier years (commonly known as the "LPC" – Leather Personnel Carrier) were

B

FIRST-GENERATION CLOSE QUARTERS BATTLE EQUIPMENT

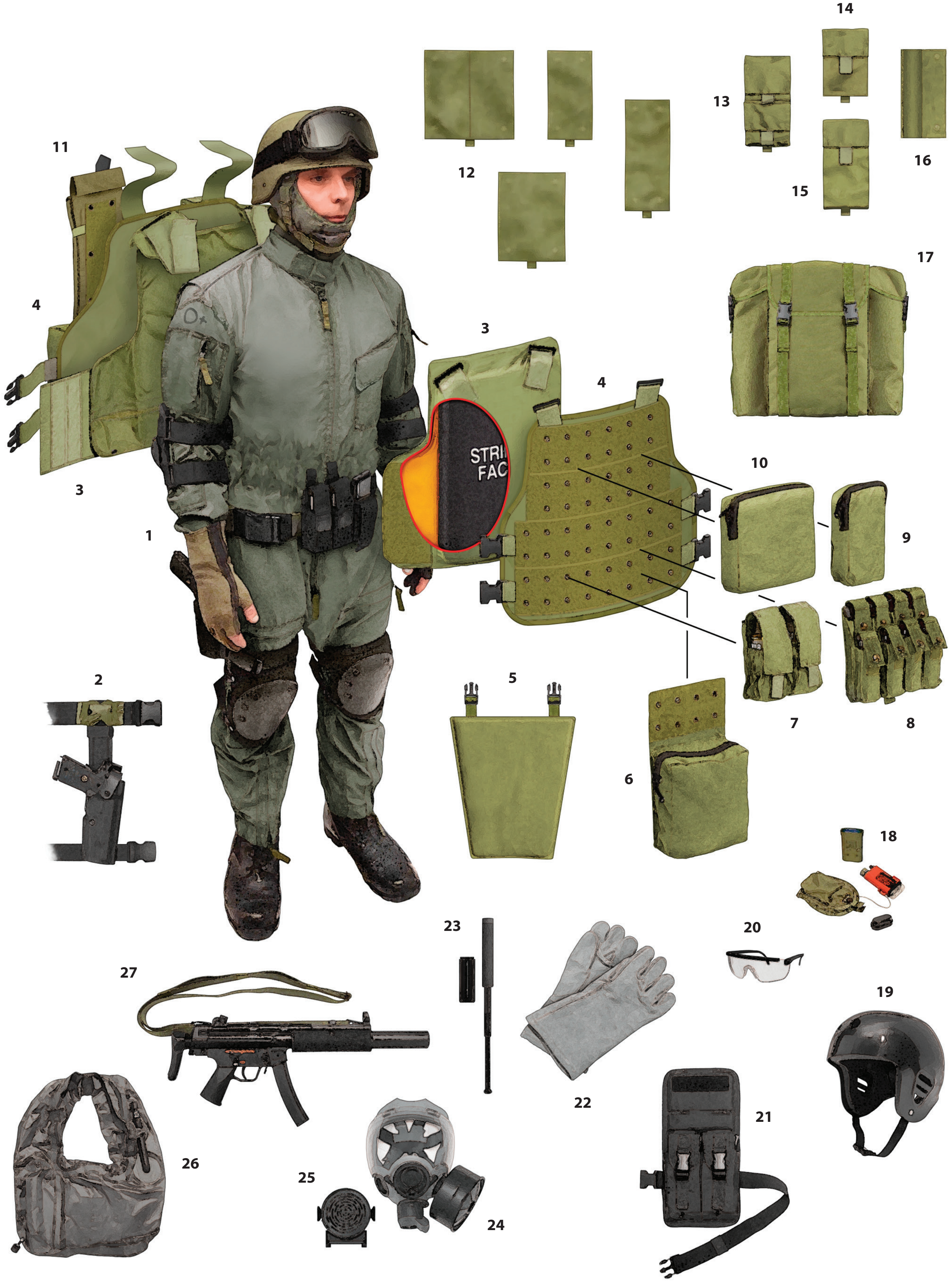
Arising from an early-1990s directive, the CQBE standardized the direct-action gear of USMC Force Reconnaissance companies and Special Reaction Teams, whose equipment had previously been purchased *ad hoc* by individual units. Formalized in 1997, CQBE consisted of six components: an Assault Suit, Assault Vest System (AVS), Assault Gas Mask, Individual Assault Kit (IAK), Assault Breacher Kit (ABK), and Assault Breacher Torch Kit.

(1) Typical equipment for a raid mission was based on a new flame-retardant Assault Suit derived from flyer's coveralls, with a balaclava and Combat Vehicle Crew gloves. Blood type was often written on the suit shoulders. IAK items included the Assault Helmet (a customized PASGT "K-pot"), Bollé X500 Attacker ballistic goggles, Alta knee and elbow protectors, and a gun belt. This accommodated a Safariland 3004 holster for the .45cal MEU(SOC) pistol – **(2)** – and a speed reload pouch holding three magazines under tension; cover flaps could be positioned open or closed. An equivalent holster and pouch for the Beretta M9 were also provided; such items were often secured in fixed positions on the belt with OD tape.

The AVS, shown in an exploded view, combined a body-armor plate carrier and load-bearing equipment. The Assault Body Armor **(3)** was a carrier vest with front and back sections, each holding a ceramic plate backed by a flexible ballistic panel (in this cutaway, yellow.) Over this was worn the Assault Load Bearing Vest **(4)**, with pouches selected for particular missions; the ALBV featured a Velcro-and-snap matrix for modular pouch attachment, plus three permanently fixed rear pouches – two kidney pouches for gas mask and general utility use, and a radio pouch at the left shoulder. The body armor vest had a detachable groin protector **(5)**, which folded up for stowage or (often) was simply omitted.

The AVS modular equipment included a drop pouch **(6)**; P7 grenade pouch **(7)**; L7M mag pouch **(8)** holding both MP5 and pistol magazines (an M4 carbine/.45 pistol variant was designed by Force Recon in 1999); P12 non-lethal munitions pouch **(9)**, P11 utility pouch **(10)**, and, worn on the back to carry breaching equipment, a P15 tactical scabbard **(11)** for a shotgun, bolt cutters, or the crowbar shown. Blank panels of various shapes protected unused areas of Velcro and snaps from damage **(12)**. The P4 mag pouch **(13)** held combinations of MP5, M4A1 and pistol magazines. Also included in the AVS were the R4 communications headset pouch **(14)**, P2 shotgun-shell pouch **(15)**, buttstock retention shoulder pad **(16)**, a day pack **(17)**, and an optional back support brace (not shown.)

A few additional items from the extensive IAK are shown at the bottom: the SDU-5/E strobe light with detachable IR filter and unidirectional blue filter **(18)**; the Pro-Tec "bump" helmet **(19)**; ballistic range glasses **(20)**; the American Body Armor Inc leg pouch for extra SMG or carbine mags **(21)**; welder's gloves **(22)** worn over normal gloves for fast-roping; and an Asp collapsible baton with carrier **(23)**. The MCU-2A/P Assault Gas Mask **(24)**, normally carried in the left rear kidney pouch of the ALBV, was better suited for close combat than contemporary infantry versions, and was issued with an optional voice projection unit **(25)**. Additional items used in conjunction with CQBE included the UDT flotation collar worn on overwater flights **(26)**, a handheld radio such as the Motorola SABER, and a communications headset. The Heckler & Koch MP5 submachine gun was the primary weapon for direct-action missions until the arrival of the M4A1, and several versions were fielded, including – in a niche role – this silenced MP5SD3 **(27)**.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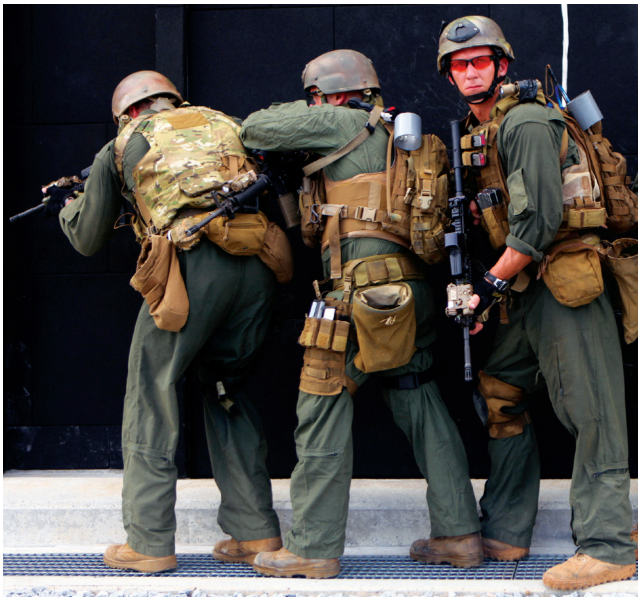


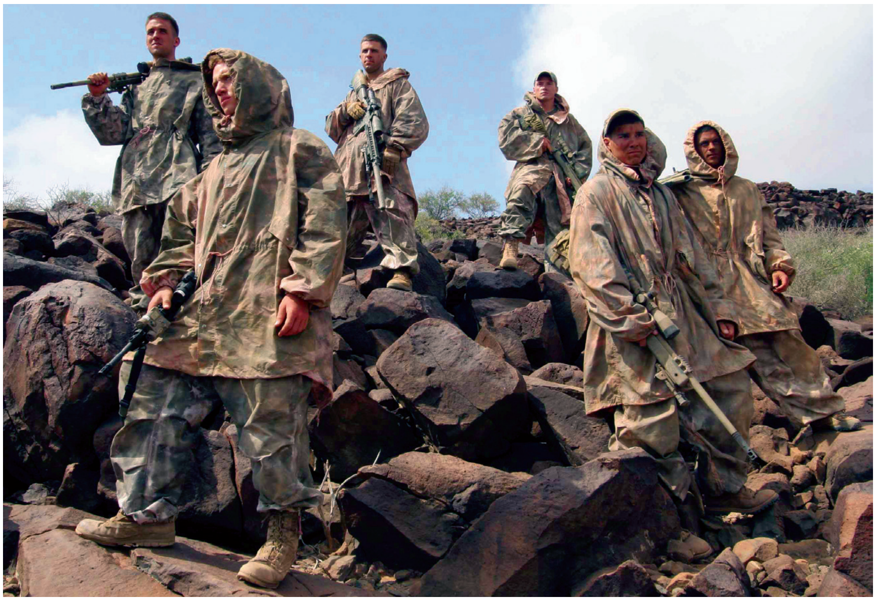
Force Reconnaissance Marines of the 31st MEU prepare to clear a building during an exercise in August 2011. The Marine at left wears a body armor carrier in Multicam camouflage; though not an officially sanctioned USMC pattern, this appears on many items purchased by units and individuals. (Cpl Garry J. Welch/USMC)

supplemented in the 1980s–'90s by several other types of more flexible footwear; these included boots made by Danner; the Adidas GSG9 combat boot, as also worn by Delta Force and the British SAS; the Palladium Pampa, worn extensively by French intervention troops; and the Nike assault boot. These offer excellent control and better cushioning than the standard combat boot; protection against repetitive stress injury is an important consideration for SOF, who typically remain on active duty over a significantly longer career than most combat troops.

Oakley assault boots began to be worn in the early 2000s and featured in the Marine Individual Assault Kit, one of several new specialist combat equipment sets (see next chapter). In recent years a number of new low-quarter athletic shoe designs have been worn by recon and MARSOC troops. Many of these can be worn inside dive fins, obviating the need for the old coral shoes ("pixie boots"). The general-issue Marine Corps Combat Boot (MCCB), developed in the early 2000s in hot and temperate weather versions, has also been worn. Currently, the new standard issue Rugged, All-Terrain (RAT) combat boot is usually worn by Force Recon personnel, since funding for their Oakley boots has been cut short.

Insignia

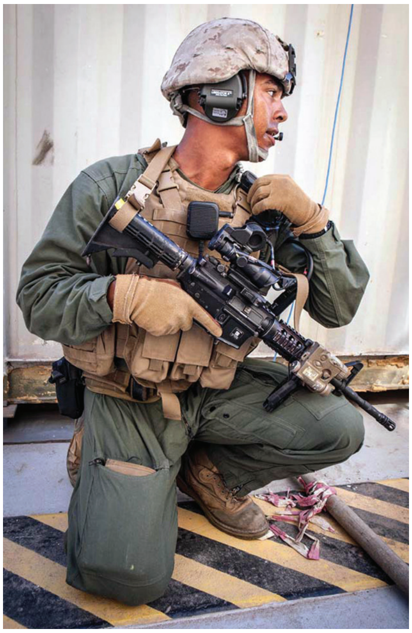
The USMC has long made a policy of minimizing the insignia worn on field uniforms. Through the early 1980s, combat uniforms bore a stenciled USMC Eagle Globe and Anchor device, and rank – nothing more. In 1982 a policy



Arctic smocks in Africa? Recon Marines of the 24th MEU utilize snow camouflage "overwhites," dyed in earth tones to mimic local terrain, during sniper training in Djibouti in 2010. Improvised camouflage is especially important to reconnaissance personnel and to snipers, who must remain concealed for long periods of time. (Gunnery Sgt James Frank/USMC) was instituted prescribing wear of an embroidered American flag patch on the right shoulder for IFF during overseas deployments. (Force Recon began the practice of attaching their flags with Velcro, prefiguring the current general practice.)

The addition of name and branch tapes to the uniform, matching the practice of the other armed services, was sanctioned in 1991. The use of Velcro-backed aircrew-type name plates somewhere on body armor was authorized in the early 2000s, and embroidered flag patches were replaced with infrared-reflective flag panels, which acted as IFF markers on night missions. Force Recon Marines had formerly written their own blood type in permanent marker on the shoulders of assault suits worn in CQB exercises, but Velcro-backed removable blood type patches became available in the early 2000s.

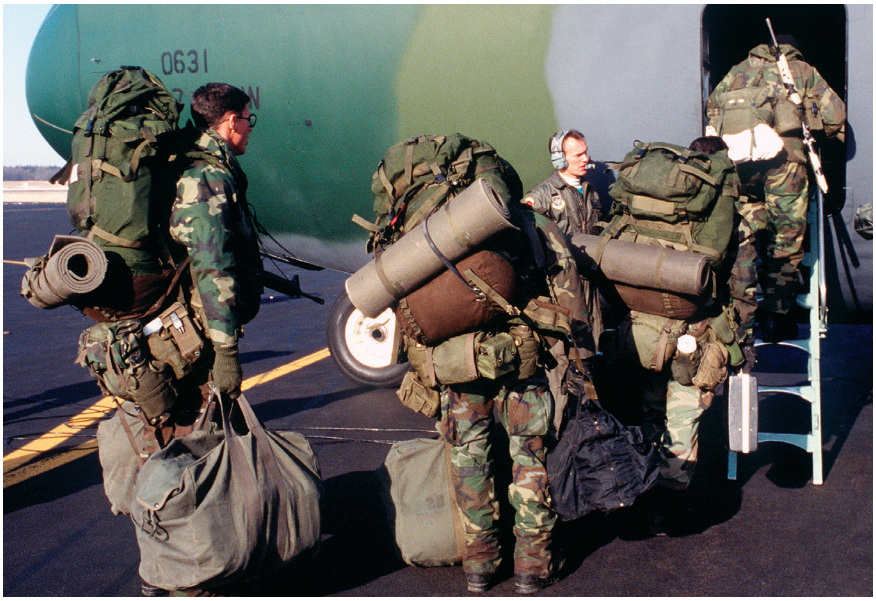
Deployed Marines will sometimes wear the Velcro-backed insignia of foreign troops with whom they are deployed; e.g., MARSOC personnel typically wear the devices of Afghan National Army or Police units with which they work. The advent of Velcro patch attachment, making for easy application and removal, has led to a new twist in the time-honored tradition of combat graffiti: the new crop of “morale patches” expressing a pithy sentiment can be quickly removed on the appearance of a combat photographer or on return from a forward operating base. Morale patches are most popular with regular line troops, but pop up from time to time in deployed recon and special-ops units.



Photographed during an oil-platform seizure exercise in February 2013, this Maritime Raid Force officer wears flight coveralls. Despite the introduction of newer flame-resistant clothing for ground troops, the decades-old CWU-27/P Nomex flight suit is well-suited to close combat and has never been completely replaced. (Cpl Bobby Gonzalez/USMC)

COMBAT ENSEMBLES FOR RAIDS & RECON

The Marine Corps has traditionally had a conservative approach, equipping all of its ground forces with standard infantry equipment. Marines tasked with special operations have had to improvise, taking a part in designing their own equipment in the absence of official alternatives. Force Recon’s



Marines of 2nd Force Reconnaissance Company board a C-141B transport in 1989, equipped with the patrolling gear of the day; this includes an assortment of ALICE and pre-ALICE web equipment, along with Lowe Alpine packs. (Tech Sgt David McLeod/USAF) needs for specialist equipment increased with the addition of a hostage-rescue role in the 1970s, and such requirements became acute when the creation of the MAU(SOC) program in 1985–86 brought additional direct-action responsibilities.

Patrolling equipment – that used on reconnaissance missions relying on stealth rather than force – consisted of modified infantry gear plus a number of commercial items, such as packs by Vector and Lowe Alpine in the 1980s–'90s and later by Eagle Industries. Typical modifications to infantry gear were the addition of heavy-duty shoulder straps and other improvements to standard ALICE rucksacks; the reworking of 40mm grenadier vests for general load-carrying by the addition of selected pouches; and the use of M3 SMG pouches as "dump" pouches for empty magazines. Direct-action gear was modeled closely on police SWAT equipment, and the Force Recon companies have had close relationships with a number of police departments, with whom they share training.

The Operational Requirements Documents

Reconnaissance/patrol and direct-action missions would become known as "green side" and "black side" respectively, from the colors of the equipment used on each. As each Force Recon company pursued its own specifications independently, their diverging tables of equipment resulted in difficulties when mounting joint operations or during individual unit transfers, and in

C

INTERIM FULL SPECTRUM BATTLE EQUIPMENT

Following the drowning of several Force Recon Marines in a December 1999 helicopter crash at sea, substantial changes were made to the CQBE for Force Recon. Crucial features were the addition of overwater survival equipment comparable to that worn by helicopter aircrew, and the development of lighter, less restrictive body armor. A new interim ensemble was rushed into production in 2000 as the Full Spectrum Battle Equipment (FSBE). The new kit gave each Force Recon Marine a flotation device and portable breathing air. It also provided a new set of body armor and load-carriage equipment to replace both the AVS and the patrolling gear. FSBE was issued in an individual kit and a platoon kit, the latter with items for shared, occasional use.

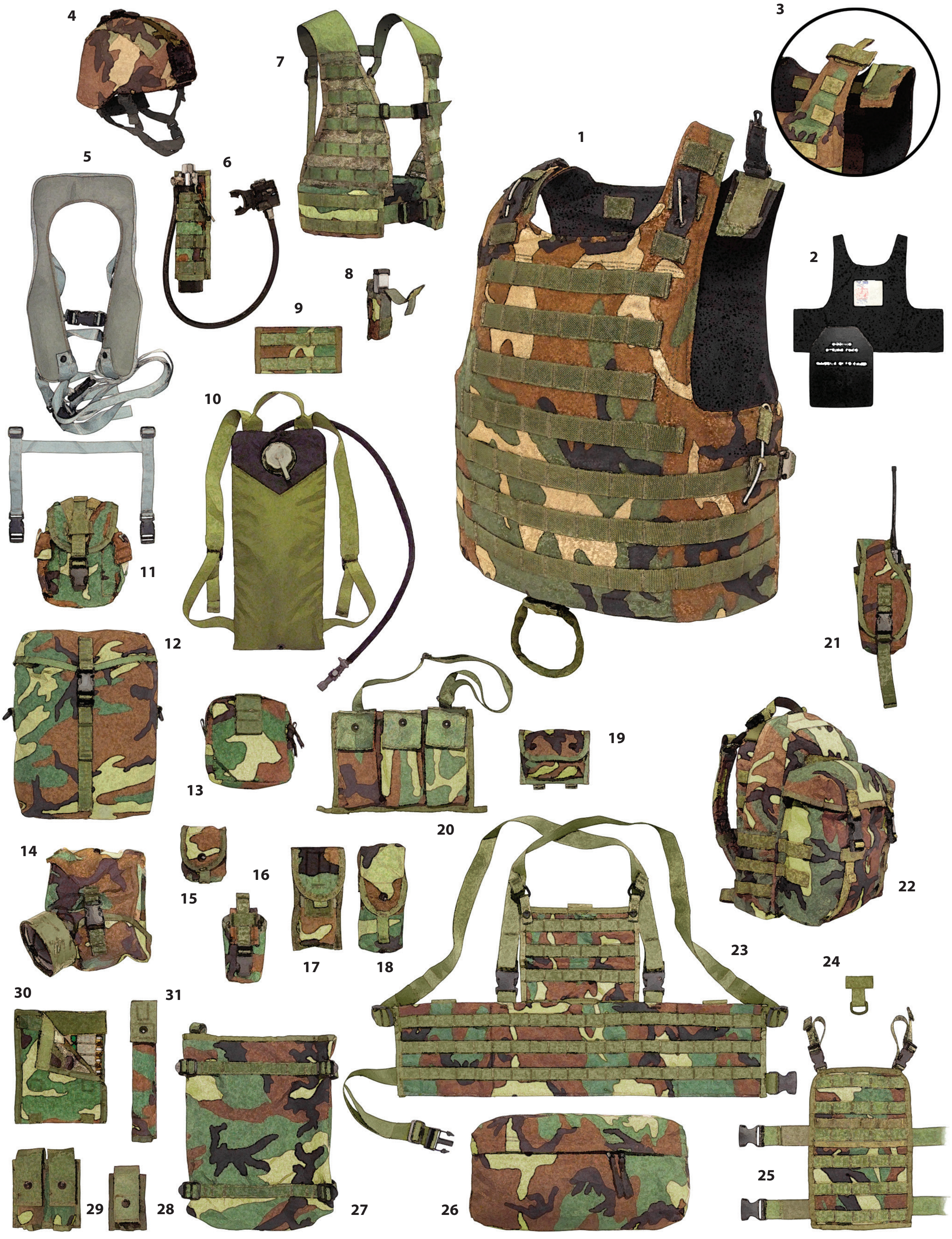
The centerpiece was the Amphibious Assault Vest **(1)**; the AAV was a nearly neutrally-buoyant vest derived from the SPEAR BALCS fielded by US Special Operations Command, using comparable soft armor and SAPI plates **(2)**. A refinement was a cable-release system permitting the vest to be jettisoned in an emergency by pulling a handle at lower front to simultaneously decouple four attachment points at the shoulders and hips. The initial AAV had unsuitable Velcro closures at these points **(3)**, and the subsequent cable-release version became standard.

Also in the individual kit were the new MICH helmet, here with first-generation cover and single-point NVG bracket **(4)**; a recon version LPU-34/P flotation collar **(5)** with modified harness incorporating a new "H"-shape spreader bar; the HABD reserve air bottle and carrier **(6)**; a Marine Assault Carrying Kit (MACK) vest **(7)**, similar to the MOLLE II Fighting Load Carrier and typically used to carry ammo for team SAWs and 40mm grenade launchers; a .45cal magazine speed reload pouch **(8)**; and a web belt MOLLE adapter **(9)**.

Several elements of FSBE were adopted from the MOLLE program, including the CamelBak hydration system **(10)**; a slightly modified 1-quart canteen carrier/utility pouch **(11)**; the sustainment pouch **(12)**; the medical pouch **(13)**, often used as an E&E pouch; the SAW 200-rd pouch, shown typically inverted for holding a gas mask **(14)**; pouches for fragmentation and "flashbang" grenades **(15 & 16)**; M4 CQB and standard MOLLE two-mag pouches **(17 & 18)**, and a five-shell shotgun/utility pouch **(19)**. Some items of new US Army Ranger equipment were also integrated into FSBE. The Ranger M4 six-mag bandoleer **(20)** differed from the standard MOLLE version in having a PALS ladder on the back that could take additional pouches, to fashion a "ready bag" or ammo resupply bundle. Other items were the SABER radio pouch **(21)**; Ranger-version MOLLE Assault Pack **(22)**; RACK harness with flotation inserts **(23)**, T-block adapter **(24)**, leg panel **(25)**, and Ranger Butt Pack **(26)**. Typically, reconnaissance and special-ops Marines break open the medical and survival kits provided, and restow in their web gear (e.g. in shotgun shell/utility pouches) the items they select for a particular mission.

The FSBE platoon kit added additional 200-rd SAW pouches, and several other types: the MOLLE manpack radio carrier **(27)**; MOLLE 40mm single HE cartridge and double illumination cartridge pouches **(28 & 29)**; a 16-shell shotgun panel **(30)**, and a single flare pouch **(31)**. The platoon kit also contained repair and maintenance equipment for use by Force Recon units.

As a side note, most FSBE items were produced using available bolts of Woodland camouflage fabric of a greenish cast. Later AAV vests and helmet covers were made in more typical Woodland colors.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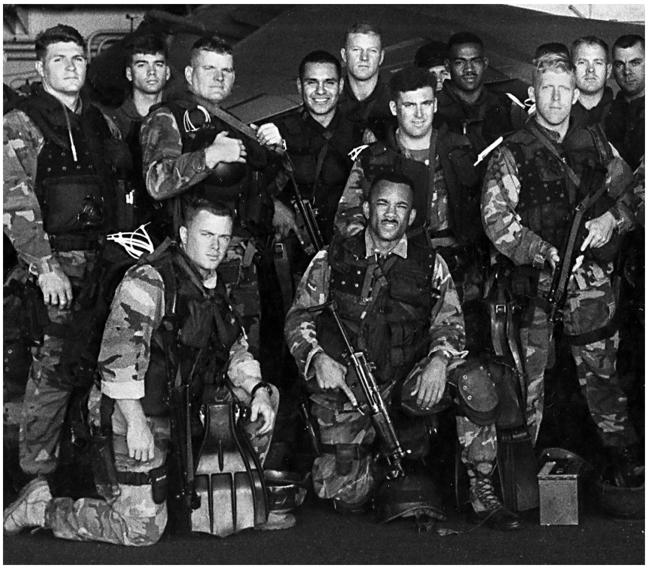

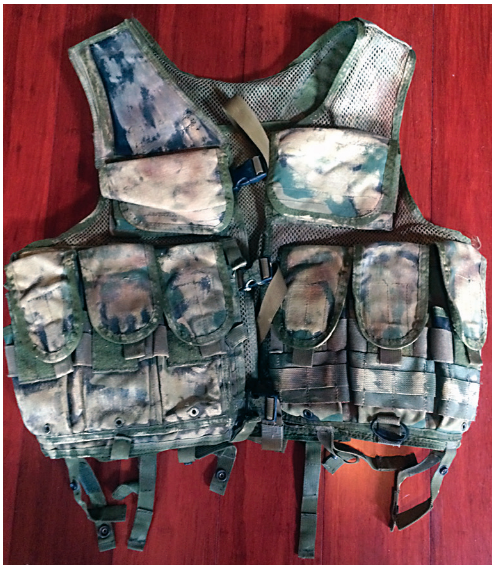

LEFT
Members of the 1st Force Reconnaissance Company, 1995, outfitted in Point Blank Enterprises law enforcement-type "black gear" for direct-action missions. Based at Camp Pendleton in California, the unit adopted this SWAT-type body armor (which they nicknamed "the Beast") used by the Los Angeles Police Department, with whom they also shared some training. The 2nd Force Recon Co, stationed at Camp Lejeune, North Carolina, independently chose comparable equipment by American Body Armor. (1st Force Recon Co/USMC)

RIGHT
In 1999, 1st Force Recon Company, who had been using CQBE with the new AVS and IAK, began efforts to develop a single load-carriage system for both patrolling and direct-action missions. This Eagle TAC-V1-N vest was one item tested, and was later used during the 2001 invasion of Afghanistan – the camouflage paint was applied to match local terrain. (John Dailey)

evaluating the efficacy and safety of equipment used by Force Recon as a whole. Further, a souring of relations between the Marine Corps and US SOCOM, with whom training and some procurement were shared, curtailed the exchange of ideas and deprived Force Recon of a valuable resource.

To correct these problems, the Amphibious Raids & Ground Reconnaissance Systems program office (currently, Reconnaissance & Amphibious Raids program office) of Marine Corps Systems Command, until then primarily concerned with parachute and dive equipment for the reconnaissance community, was tasked in the early 1990s with providing standardized specialist equipment for reconnaissance and special-ops Marines, through three new operational requirements documents (ORDs) intended to provide common sets of patrolling and direct-action gear. A Reconnaissance, Patrolling, Insertion & Extraction Equipment (RPIE) ORD was drafted to support "green-side" operations, while "black-side" gear was specified by the Close Quarters Battle Equipment (CQBE) ORD. (For the third ORD, on Underwater Reconnaissance Capability, see below under "Insertion & Extraction").

Two equipment groups were planned, each named after its "parent" ORD. Captains Mike Olsen and Steve Berger headed teams tasked with developing specifications for the new RPIE and CQBE equipment groups, respectively; they were succeeded in 1993 by Capt Tom Little, who saw both projects to completion. Little's previous experience commanding a Special Reaction Team (SRT) would be particularly valuable in the CQBE program. For the sake of speed and economy the new RPIE and CQBE gear would consist, as much as possible, of modified existing commercial designs rather than completely new items.

The RPIE group of equipment

RPIE was a diverse group of mid-1990s "green-side" items intended to save weight and bulk on deep-reconnaissance missions. It included a newly-designed set of load-bearing and lightweight insertion/extraction equipment – the LBE/SPIE kit; a configurable poncho/tent/sleeping set called the Multipurpose Poncho System; the Team Water Purification Filter – to be used in lieu of hauling large quantities of potable water on long missions in areas of dubious water quality; and a Boat Safety Kit to equip all small raid craft. The core of the LBE/SPIE kit was an ingenious load-carriage vest and pouch system. Similar in overall appearance to the IIFS Individual Tactical Load-Bearing Vest that would shortly be fielded by USMC infantry, the LBE/SPIE vest differed in using modular, positionable pouches as opposed to the fixed pouches of the IIFS vest. It could also integrate a rappel seat in place of a pistol belt, similarly to the Vector LOCO pack already in use by Force Recon.

Unfortunately, the vest relied upon ALICE fasteners which did not provide adequate stability for heavily-laden pouches; the clips often worked their way loose, causing loss of equipment. The timing of the vest's fielding was also unfortunate: the revolutionary Pouch Attachment Ladder System (PALS) that appeared shortly afterward might have given the LBE/SPIE vest a more successful career. In the end, the vest was not used and was soon forgotten.[3] The one piece of equipment that proved an immediate hit was the SPIE harness: this lightweight version of a heavy-duty harness in use since the 1970s was much more easily carried in a rucksack. Although funding was not renewed for continued acquisition, Marines used these through the end of their useful service life, and photos show the lightweight SPIE harness in use as late as 2005.

The MPPS was also greatly appreciated for its saving in weight and bulk, combining shelter, sleeping bags and rain gear into a single lightweight piece of kit. Sadly, its use was short-lived after funding was cut. This was not an unusual fate – many other projects at Raids & Recon came to untimely ends because of well-intentioned directives at higher levels to simplify procurement, resulting in niche programs being shelved in favor of competing infantry equipment programs.

The CQBE group of equipment

Unlike the RPIE equipment set, the mid-1990s CQBE direct-action ensemble would enjoy long-lived success, evolving into the most important component of individual equipment used by recon Marines and MARSOC today. As originally conceived, the ensemble combined six mutually-supportive component sets to provide a complete toolkit for direct-action missions: the Assault Suit ensemble, Assault Vest System (AVS), Assault Gas Mask, Individual Assault Kit (IAK), Assault Breacher Kit (ABK), and Assault Breacher Torch Kit (ABTK). The new equipment was initially planned in all-black, but soon changed to olive and sage green to provide more versatile camouflage.

The Assault Suit was a set of flame-resistant garments based on the experience of counter-terrorist teams of the British SAS. It included a single-piece coverall of Nomex IIIA fabric, derived from flight and Combat Vehicle Crew coveralls but with pockets and other features tailored for close combat, CVC Nomex gloves, and a Nomex balaclava.

The AVS was closely modeled on police-pattern "black gear" as already in use by the Force Recon direct-action platoons. It consisted of a dual vest system – an armor vest underneath a modular equipment vest – with a set of pouches attaching to the vest by a Velcro-and-snap grid array, then standard for law-enforcement gear. A day pack and a tactical scabbard for long items fastened interchangeably to the back of the equipment vest. The armor vest, typical of SWAT gear of its day, provided extensive torso coverage exceeding NIJ Level IIIA protection, and carried armor plates rated at NIJ Level IV, robust enough to stop a .30-06 AP bullet (the 1st Force Recon Co took to calling it the "Green Monster.")

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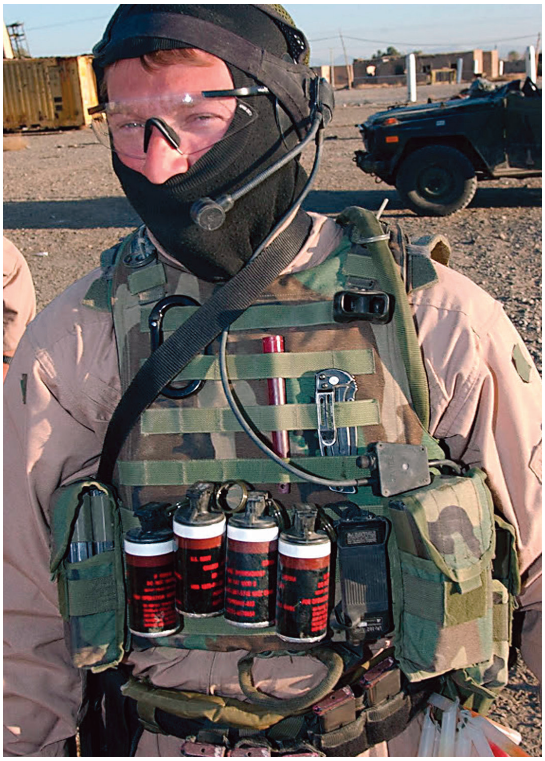
[3] However, recon Marines later discovered that the LBE/SPIE vest could be easily modified to accept MOLLE pouches, at a useful canted angle not available on the standard MOLLE vest. Thus modified, the LBE/SPIE vest appears to have been used on at least one occasion as late as 2004.

The Assault Gas Mask was the MCU-2A/P, preferred over the infantry mask for its superior field of view and convenience when handling weapons; it could also be attached to a portable tank of breathing air when necessary. The Individual Assault Kit included climbing and rappelling equipment for maritime and urban use, protective equipment and load-carrying equipment to complement the AVS, personnel restraints, and miscellaneous other items. The load-carrying component centered on a gun belt worn below the AVS, providing a polymer self-locking holster plus a number of pouches.[4] The ABK was an extensive toolkit for dynamic forced entry, including bolt cutters, wrecking bar, explosive breaching support equipment, and a wide variety of other items. The ABTK was an adapted commercial oxygen cutting torch.



The Interim FSBE kit was first used in combat during the war in Afghanistan. This Force Recon Marine, dressed for a raid near Kandahar in January 2002, wears the quick-release Amphibious Assault Vest, IAK gun belt, and a Davies communication headset for the recently-introduced MBITR radio (which is hidden from view on his back). He carries on his AAV several Mk 141 Mod 0 stun grenades, and an assortment of gear including – at his left shoulder – a bracket to secure the mouthpiece of the HABD air bottle carried during overwater flights. (Sgt Andrew D. Pomykal/USMC)

The standard CQBE ensemble, incorporating lessons learned over the previous decade of direct-action experience, was used throughout the Force Recon, Special Operations Training Groups, and SRT. It was not without its shortcomings, and a broad push for improvements was made in the late 1990s; the 1st Force Recon Co commander, LtCol Robert Coates, who would later command Detachment One, was a driving force behind the improvement and acquisition of equipment. A particularly glaring oversight of CQBE was that the ORD on which it was based did not require a flotation device – of particular concern to Force Recon, whose members frequently overflew bodies of water on helicopter flights to objectives. This deficiency had been identified during development, but no funding to address it was available at that time. Force Recon did have UDT flotation collars available from their swimming kits, but these were not of sufficient buoyancy to support the weight of their heavy assault gear. In 1998 the task of identifying a suitable flotation device was given to a former Army Ranger named Jon Laplume, a project officer at the Army Natick Soldier Systems facility who was loaned to Marine Corps Systems Command. After evaluating several options, the LPU-34/P inflatable flotation collar from the Aircrew Integrated Recovery Survival Armor Vest & Equipment (AIRSAVE), then under development for helicopter crews, was chosen, and named for CQBE purposes the CQB Personal Flotation Device (CQBPFD). Funding could still not be obtained, however, and the UDT collar remained the best option available.

Changes to the AVS itself were also advocated, chiefly by LtCol Coates

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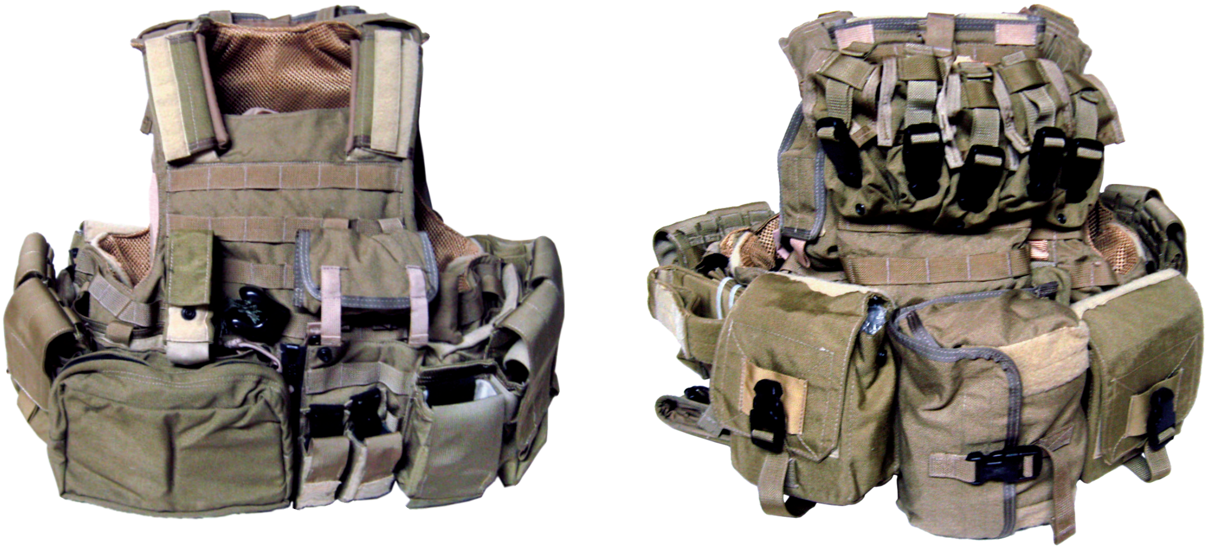
[4] New polymer SLS holsters were developed by Safariland in response to a SEAL request following the 1990–91 Gulf War, when various leather holsters had not held up well to repeated soaking.



Prototype second-generation FSBE MS-CIRAS vest, and attached load-carrying equipment, shown from front (left) and rear. Early features to note are the khaki color; the front zipper fastening of the cummerbund section; the shotgun-shell or utility pouch positioned on the left chest (a carryover of Interim FSBE that was not included in the Gen II FSBE production kit); and an early-pattern gas mask carrier, seen at the center of the back. (via author)

and 1st Force Recon. Although they were generally satisfied with the vest design, a request was made for a lower armor protection specification that would allow the use of lighter plates to reduce weight. Secondly, the adoption in 1998 of the M4A1 carbine in place of both the M16A2 and MP5 simplified ammunition requirements, and consideration began to be given to combining elements of "black-side" and "green-side" gear into a single load-carrying system for both purposes, thus replacing the AVS load-bearing overvest and ALICE patrolling equipment. To this end, modular vests by Eagle Industries were tested in 1999. Meanwhile, at Raids & Recon in Quantico, improved one- and two-piece Assault Suit prototypes were being developed, but – like the CQBPFD and the AVS improvements – these had to be placed on hold because of insufficient funding.

The *Pecos* tragedy

On December 9, 1999, a CH-46D Sea Knight carrying men from 5th Platoon, 1st Force Recon Co crashed into the sea 15 miles off the coast of San Diego during a maritime raid exercise. The helicopter snagged a safety net while attempting to land on the *USNS Pecos;* it flipped onto its back, slammed into the water below, and sank within seconds. Eleven passengers and crew escaped, but seven did not. Although a later USMC statement implicated the Assault Vest System as a causal factor in the deaths, autopsy findings suggested that most of the dead were knocked unconscious in the crash and thus incapable of exiting the helicopter. In truth, the tragedy resulted from a cascade of unfortunate events rather than any single cause, but at that time full passenger safety equipment was not standard on helicopters, nor was appropriate helicopter egress training ("dunker" training) made available to all passengers. It was starkly clear that if such a crash happened again, troops wearing standard infantry gear – and even unburdened passengers – would again be in deadly peril.

Prior to this accident, aviation passenger safety equipment was accorded a low priority in the Navy and Marine Corps. Any complacency evaporated in the aftermath of this crash, and the USMC commandant directed the immediate provision to Force Recon personnel of flotation equipment and portable breathing-air bottles, along with the acquisition of lighter body armor with a quick-release feature suitable to maritime operations. A plan to authorize procurement was set forth in a Statement of Need (SON) of January 27, 2000, and more realistic "dunker" training in full combat gear was also authorized.

The AVS was singled out for opprobrium in the wake of the 1999 crash, though the general consensus prior to that event favored improvements rather than wholesale replacement. In truth, the system simply represented the status quo at that time in its favoring of heavy armor protection at the expense of mobility, and the controversy would recur a few years later with regard to the similarly encumbering Modular Tactical Vest. However, a heavy assault vest was clearly not the best choice for Force Recon, and the design specifications would now change.

Interim FSBE

With the weight of the SON document squarely behind them, the Raids & Recon program office immediately set about considering changes to CQBE. Although a sweeping overhaul of the entire program would be set in motion in the near future, the immediate focus was on incremental improvements to improve the version of CQBE issued to Force Recon – land-based SRT units would continue to use the existing gear. In addition to a flotation device and air bottle, what was desired was body armor that was lighter and less hindering of movement, and which could be released quickly in an emergency. The adoption of the M4A1 carbine as a common "green side/black side" weapon, and the recent appearance of MOLLE with its Pouch Attachment Ladder System, argued for the development of a common load-carrying system for both types of missions. After additional discussion it was decided to replace the AVS rather than modify it, in the belief that existing armor standards were too conservative. This cleared the way for using the new, lighter SAPI armor plates and ballistic panel material developed for the Army/USMC Interceptor infantry armor program (this decision alone would cut 10lb off the weight of the new body armor). Other improvements would include an updated helmet and integrated communications headsets kit. Jon Laplume, who had earlier worked on the postponed CQBPFD project, now found it revived, and joined a team led by Capt Randall Hoffman at Marine Corps Systems Command to design, assemble, and field test an interim AVS replacement within 200 days. The name chosen for the new system was Full Spectrum Battle Equipment (FSBE).[5]

Laplume and the team in fact designed and assembled the FSBE system in only 10 days, adopting items from existing programs whenever possible. The CQBPFD flotation device was joined by the Helicopter Aircrew Breathing Device (HABD), a portable reserve air bottle. The new TC-2000 Modular Integrated Communications Helmet (MICH) developed for the SOCOM SPEAR program was selected, but delays in the accompanying communications

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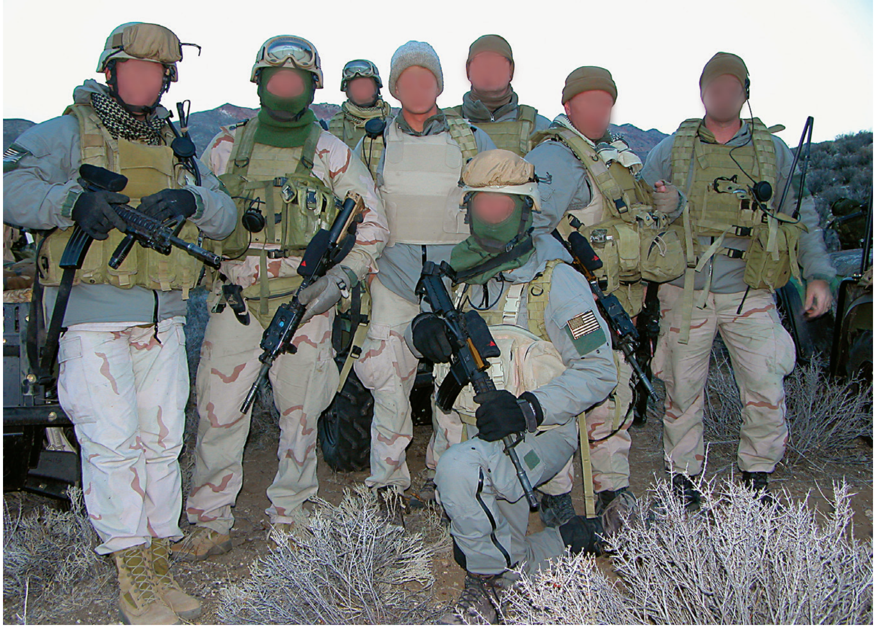
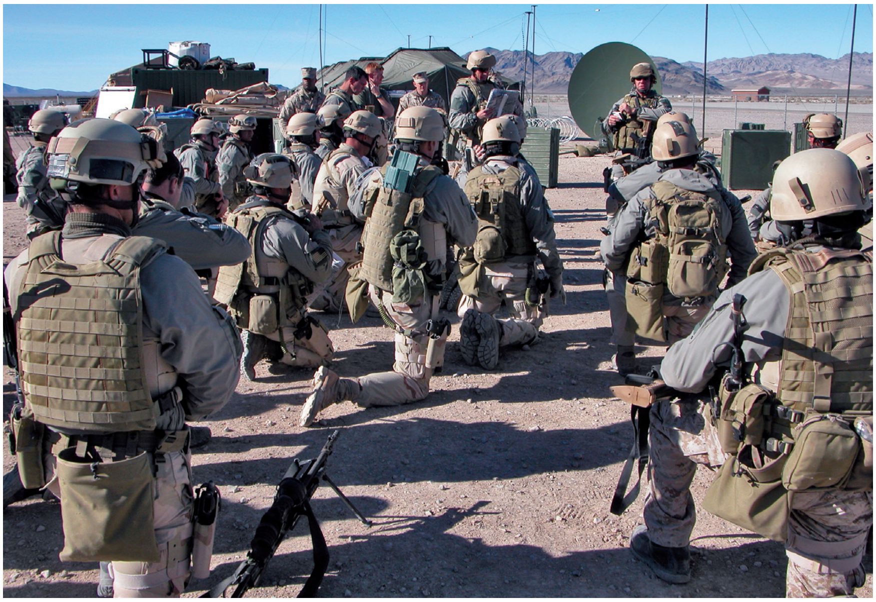
[5] The name was drawn from "The Strategic Corporal: Leadership in the Three Block War," an article written by the 31st Commandant of the Marine Corps, Gen Charles C. Krulack, for the January 1999 issue of *Marines Magazine*. As FSBE was intended as an all-around system, it would equip Force Recon Marines for the "full spectrum" of conflict-zone responsibilities envisaged in the article.

To avoid confusion with the second, more permanent 2004 embodiment of the FSBE program, first-generation FSBE is referred to in this text by its eventual official name of "Interim FSBE", and the permanent program as "second-generation FSBE", or Gen II.





Two photos of Marines of Detachment One during the "Capstone" exercise in December 2003 (with faces obscured). Their clothing combines standard tricolor-camouflage desert combat uniform (DCUs) with alpha gray Protective Combat Uniform outerwear acquired from Natick. Originally designed for SOCOM, the PCU found its way to Marine recon units through the Parachutist's Individual Equipment Kit. The equipment worn is prototype Gen II FSBE and MIAK, with a smattering of commercial chest rigs. Reception of the new equipment by Det One and Force Recon during testing was overwhelmingly enthusiastic. (Patrick A. Rogers)

headset package prevented its inclusion with the helmet. PALS-compatible webbing equipment was selected from MOLLE and various Ranger programs, with new items created as needed. Initially, the SPEAR BALCS vest used by SOCOM was considered, but instead a new body armor vest was designed by Laplume. Called the Amphibious Assault Vest (AAV), it was based closely on the BALCS model, with an area of coverage one-third less than the old AVS which reduced weight and improved mobility. The BALCS three-ply interleaved Velcro shoulder attachment was reduced to a simple two-ply overlap to ease emergency removal, and the PALS ladder arrangement was substantially changed. Two FSBE kits would be produced: an individual or "shooter" kit, containing essential equipment to be issued to each Force

Recon Marine; and a platoon kit containing supplemental web gear and maintenance items.

The AAV was an immediate improvement over the old design: it was much lighter, allowed more freedom of movement, and in water it had near-neutral buoyancy. However, a problem soon emerged when it was discovered that the Velcro shoulder attachment would often separate if a full load of gear was placed on the vest, particularly when the Velcro was immersed in water during training exercises. A revised version was developed using a single-point cable release mechanism inspired by the Harness, Single Point Release (HSPR) used in airborne operations. (The new vest is usually called the AAV-Quick Release or AAV-Quick Detach, but this is misleading: both versions are quick-releasing, and the cable-release was added to help secure the shoulder and waist attachments from unwanted separation. For this reason, the revised version is referred to here as the cable-release AAV.) The single-point cable release would, in fact, come to be a standard part of future USMC ground forces body armor vest designs.

The new Interim FSBE system was rushed into production and testing; it was ready to field within the allotted 200 days, and because of its PALS-compatibility and varied load-carrying vest options it effectively replaced both patrolling and direct-action equipment at a single stroke. In all, 460 sets were produced for Force Recon and attached personnel in 2000–01. Interim FSBE was not produced for other units, though the Fleet Antiterrorism Security Teams (FAST) liked the AAV enough to procure their own versions, fitted with load-carriage and survival equipment of their own choosing. Although owing all its important features to the aircrews' AIRSAVE kit, Interim FSBE marked a radical departure from previous ground-troops' equipment, and pointed towards the future equipments not only for Force Recon, but for all USMC ground forces.

Second-generation FSBE

The Interim kit was well-received, and would be worn by Force Recon personnel attached to the 15th MEU(SOC) in combat during the opening phase of the war in Afghanistan in late 2001–early 2002, who provided feedback on its

D

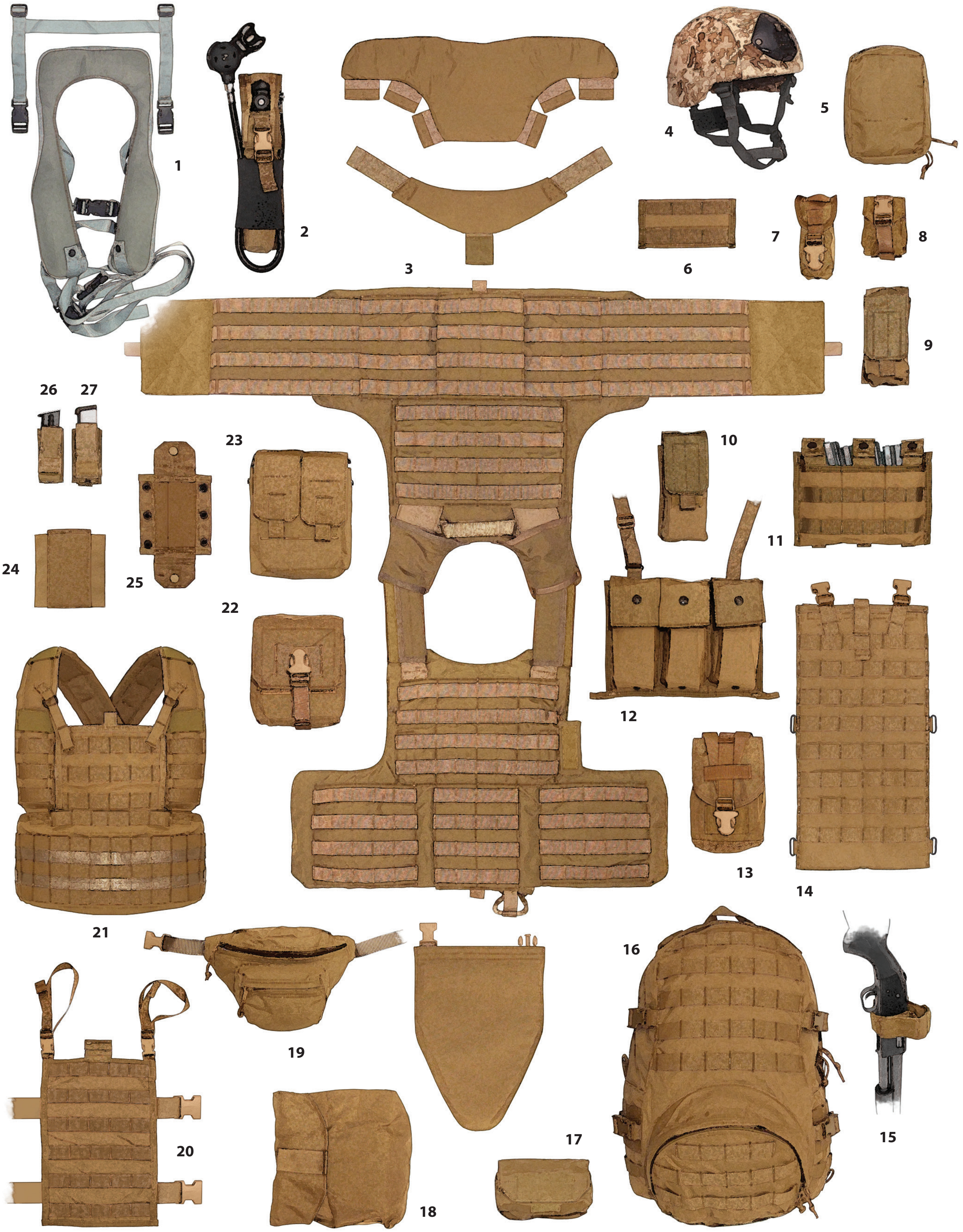
FULL SPECTRUM BATTLE EQUIPMENT, GENERATION II

Emerging in 2004 in succession to the interim ensemble, second-generation FSBE reflected experience from earlier programs, and also benefited from "cross-pollination" of ideas with Natick Labs, where similar kits were being planned for US Special Operations Command. Like its interim predecessor, FSBE Gen II was produced in both individual and platoon kits, but five configurations of each were planned to meet the requirements of several user groups. The production version was manufactured in the coyote-brown color recently adopted for USMC combat equipment. The following types of equipment were allocated to the individual kits, though no single configuration contains all of them:

The recon version LPU-34/P (1) was retained, with the SEA Mk 2 air bottle and carrier **(1 & 2)**. The MS-CIRAS body armor vest **(3)** is shown laid flat, with collar and throat attachments above it and groin protector below. The MICH helmet **(4)** has a redesigned cover and new three-point NVG attachment "shroud". Kits included a medical pouch **(5)**; web/dive belt adapter **(6)**; and flashbang, fragmentation, and smoke grenade pouches **(7, 8 & 9)**. M4 magazines could be carried in a single/double-mag pouch **(10)**, triple-mag "shingle" **(11)**, or six-mag bandoleer **(12)**. Other items included a 1-qt canteen carrier/utility pouch **(13)**, and hydration reservoir carrier **(14)** – canteens and reservoirs were obtained separately. A catch for slung weapons was provided **(15)**, as were a patrol pack **(16)**, 24-shell shotgun pouch **(17)**, gas mask carrier **(18)**, E&R "belly" bag **(19)**, and leg panel **(20)**.

A so-called Rhodesian Recon Vest **(21)** could be adjusted for height/storage capacity by unfolding an additional PALS increment at the bottom (here shown stowed). M60 **(22)** and M249 **(23)** ammo pouches were issued with a removable internal divider **(24)**, and a seldom-used snap-on split cover for direct belt-feeding **(25)**. Speed reload pouches for both 9mm and .45cal pistol magazines **(26 & 27)** were provided in different versions of the kit.

Additional items from the individual kits and from the platoon kits are illustrated on Plate E.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performance. Meanwhile, work at Marine Corps Systems Command on a more permanent version had continued as part of the planned comprehensive overhaul of CQBE. Initially it had been anticipated that the new kit would be fielded in mid-2001, but a shift in priorities delayed full production until 2004.

The new equipment (still officially named FSBE, but referred to by those working on it as FSBE Generation II) was designed upon lessons learned from experience with AVS and Interim FSBE. Many of the team who had worked on the interim kit continued their involvement with its replacement, including Jon Laplume at the Natick SOF office. The new design added a number of new pouches, vests, and other equipment suggested by field experience. Second-generation FSBE placed a greater emphasis on diving and amphibious compatibility, and on providing more support for breaching equipment. Like Interim FSBE, it would be produced in individual and platoon kits, but differed in being planned for a number of user groups: Force Recon and recon battalions, Special Operations Training Groups, Radio Reconnaissance platoons, FAST Teams, MEU(SOC) helicopter assault companies, EOD and sniper elements, and – after its creation in 2006 – MARSOC. Three configurations of the kit (A, B & C) were initially planned to meet the needs of these groups, later increased to five (D & E).

Options for body-armor carriers were added, including a low-visibility vest/plate carrier combination originating in the Navy SEAL MBSS system. A new FSBE vest, the MS-CIRAS (of which a SEAL counterpart, the MAR-CIRAS, was developed at the same time) replaced the original AAV; like the AAV, it had a single-point cable release feature. Armor plates in Configuration A of the kit (the recon, SOTG, and Radio Recon version) were changed from SAPI to newer SPEAR plates. The increased quantity of pouches would allow simultaneous setup of three load-carriage systems. Attachment of PALS equipment is time-consuming, and the redundant pouches would allow multiple preconfigured vests for various mission profiles.

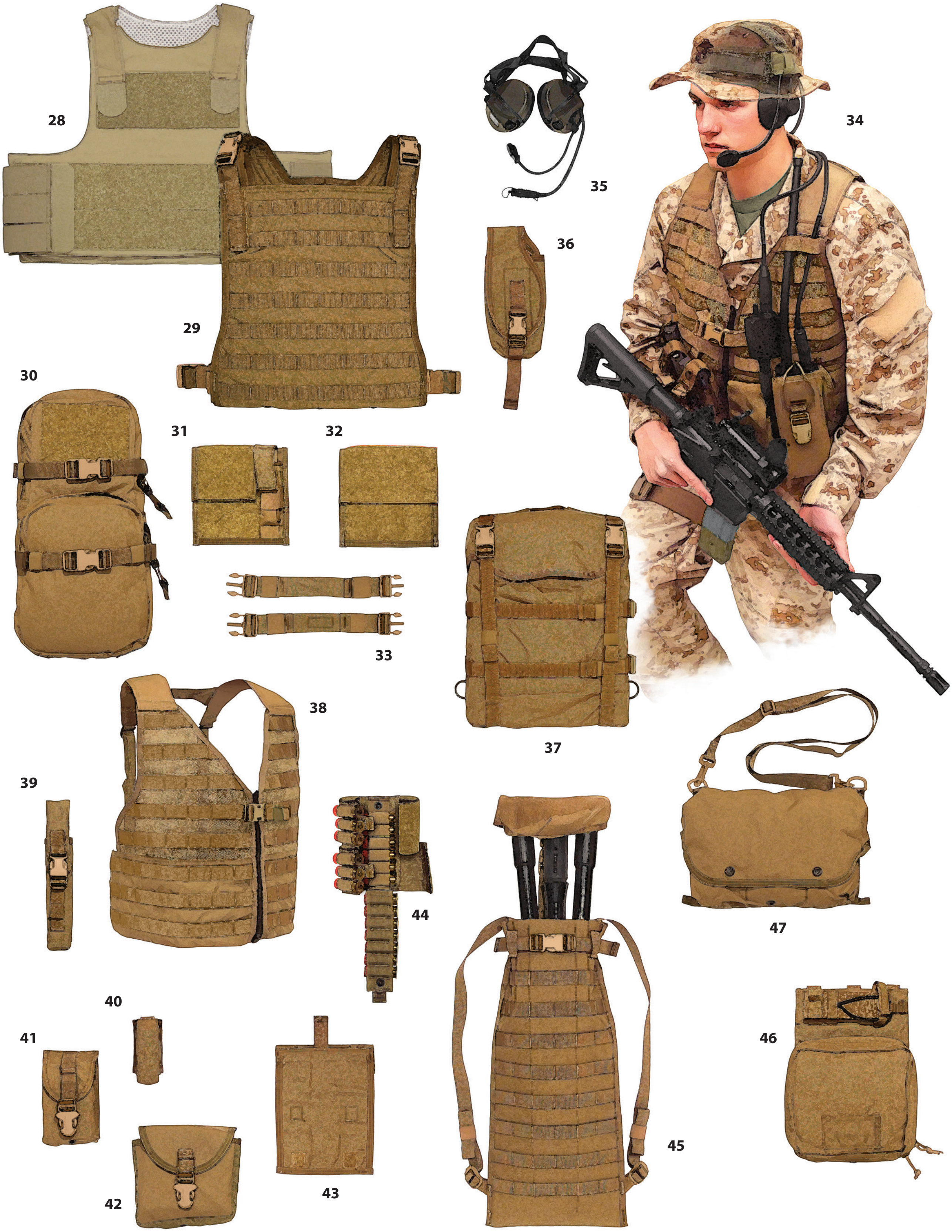
Just as Interim FSBE had benefited from first-generation PALS-compatible kits emerging at the turn of the millennium, the second-generation kit would benefit from concurrent work on a new generation of special-ops kits underway at Natick. These fell under an umbrella program called the Special Operations Forces Load Carriage Systems (SOFLCS), a family of body armor/load-carriage kits developed for each of SOCOM's constituent members from a common pool of web equipment. The first of these kits, the Maritime Load Carriage System (MLCS), was at that time being developed

E FULL SPECTRUM BATTLE EQUIPMENT, GENERATION II (CONTINUED)

In addition to equipment illustrated on Plate D, the FSBE individual kits include several items adopted from the SEAL MBSS kit: a low-visibility armor vest **(28)**, armor plate carrier **(29)**, modular Assault Pack **(30)**, administrative/GP pouches with and without flashlight holder **(31 & 32)**, and optional adapter straps to attach the MBSS plate carrier back panel to the Rhodesian Recon Vest **(33)**.

Also included in the individual kits is the MICH communications kit, featuring headsets for high- and low-noise environments, a detachable push-to-talk (PTT) module, and a range of cables compatible with current radios. The figure **(34)** illustrates use of the low-noise headset and PTT module with an MBITR radio and pouch. There is an alternative low-noise headset for land use (not shown); the high-noise MICH headset is shown as **(35)**, and individual-kit radio pouches include one for the SABER handheld radio **(36)**.

FSBE platoon kits provide additional quantities of items from the individual kits, plus others for specific team members or assignments, including a manpack radio carrier **(37)**, SOF Field Load Carrier Vest **(38)**, pop-flare pouch **(39)**, 40mm HE single grenade pouch **(40)**, DMR magazine pouch **(41)**, .50cal Barrett magazine pouch **(42)**, 16-shell shotgun panel **(43)**, shotgun breacher assault pouch **(44)**, breaching tool carrier **(45)**, Mk 54 breacher pouch **(46)**, and Advanced Squad Demolition Kit bandoleer **(47)**. Maintenance items and additional communications equipment are also included in platoon FSBE kits.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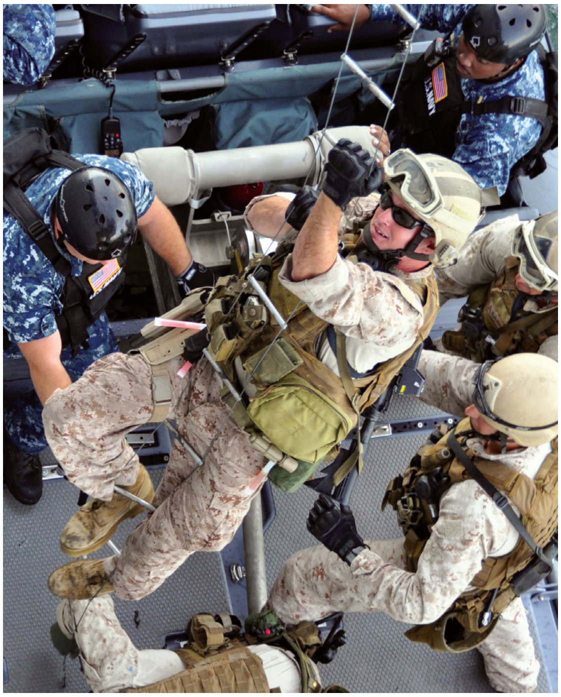

A Marine climbs a "pilot's ladder" during a maritime Visit, Board, Search & Seizure (VBSS) exercise held in September 2012. His MIAK equipment is especially prominent, including an SLS holster, pistol magazine pouches, speed reload pouch, utility pouch, and flashlight. This Marine has "wolverine stripes" – lengths of tape stuck to the top of the helmet for use in securing demolition charges; this practice is common among assistant breachers. Demolition charges are quite often used by recon and special-ops personnel; designed as engineering tools rather than offensive weapons, they are typically used to breach doors and other obstacles during raids. (MC2 Terah Mollise/USN)

for Navy SEALs; FSBE Gen II borrowed heavily from this kit, and through it from the earlier SEAL MBSS kit. The khaki color specified for MLCS was chosen for FSBE Gen II in anticipation of use in arid environments. (Contrary to some claims, the prototype FSBE Gen II kits were not borrowed from the Navy MLCS program, but new equipment produced specifically for the USMC FSBE program.) Other changes included an upgrade from the HABD to the larger capacity SEA Mk 2 reserve breathing-air system, and addition of the MICH communications kit, ready in late 2003 after years of delay.

User field evaluations by Force Recon and SOTG were completed in March 2003, with additional testing and certification of lifesaving equipment continuing through August. Detachment One was equipped with the prototype kit when it was activated in late 2003, and would also test the MICH communications system and an updated IAK kit (described below). As a result of input received through 2003 and early 2004, the final production version was selected in 2004. Beside a number of small changes, the most noticeable difference was a shift in color to the new coyote brown that had recently become standard throughout the Marine Corps.

MIAK and MABK

The IAK, ABK and ABTK components of CQBE also received overhauls. IAK was expanded with new types of equipment including a new supplemental flotation device, while other items, such as helmets, were removed.[6] Just as the original IAK had complemented AVS, this updated Marine Individual Assault Kit (MIAK) was designed for compatibility with FSBE. Central to this change was the replacement of legacy load-bearing equipment with new PALS-compatible web equipment. Another change was the replacement of black items with gear in shades of tan and khaki, which were much better suited for the environments in which US forces were now committed to combat. Testing and field evaluation of MIAK was completed six months after FSBE Gen II, and the production version was fielded in 2005. The resourceful Col Coates was closely involved with MIAK, ensuring that the most current and appropriate items were included. Unlike the FSBE program, MIAK was not transferred to the infantry equipment program office at Systems Command, so the color of the web gear component was never changed to coyote brown.[7]

The ABK and ABTK were now combined into a single kit and the contents updated on the recommendations of Det One, following their experiences with a custom selection of new breaching equipment taken with them on deployment. The new kit, called the Marine Assault Breacher Kit (MABK) was developed after MIAK and fielded in 2006.

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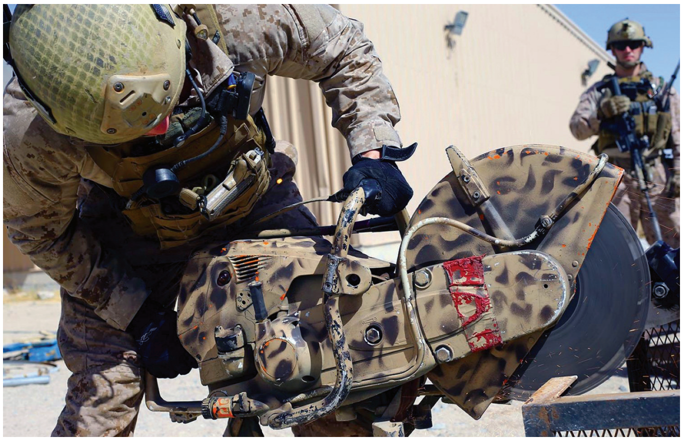
[6] The PASGT helmet from the IAK had been replaced with the MICH in FSBE, and the Pro-Tec "bump" helmet was administratively moved to Parachutist's Individual Equipment Kit (PIEK), discussed below under "Insertion & Extraction."

[7] The color of available web gear used in IAK varied by manufacturer and over time. This resulted in a "mostly" khaki kit with a mixture of khaki and coyote brown items.

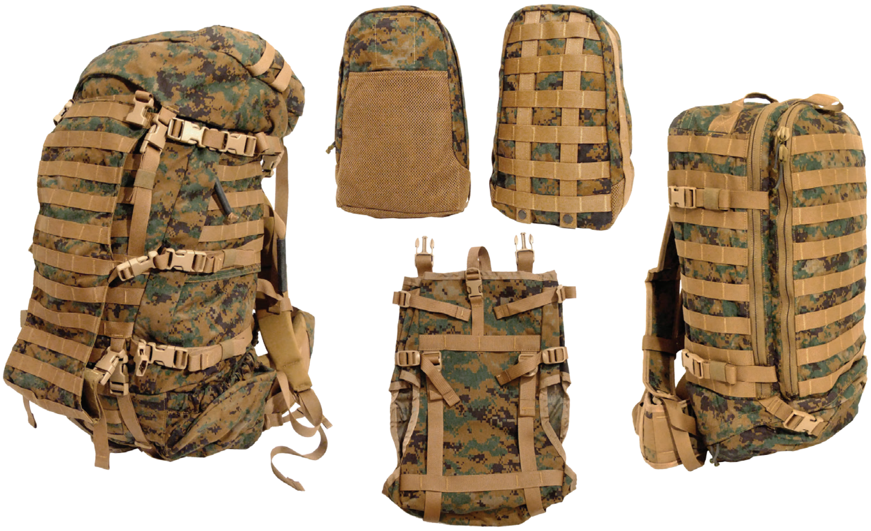

September 2014: a recon Marine from 11th MEU practices cutting technique with a Stihl Cutquik power saw from the Marine Assault Breacher Kit, its high-visibility orange factory finish covered with improvised camouflage paint. The MABK contains Cutquiks, Broco cutting torches, and a number of other tools and support equipment for dynamic entries. Note on the Marine's helmet a "net" sprayed camouflage pattern, side rails, and the Norotos universal NVG shroud in tan finish. (Lance Cpl Evan R. White/USMC)

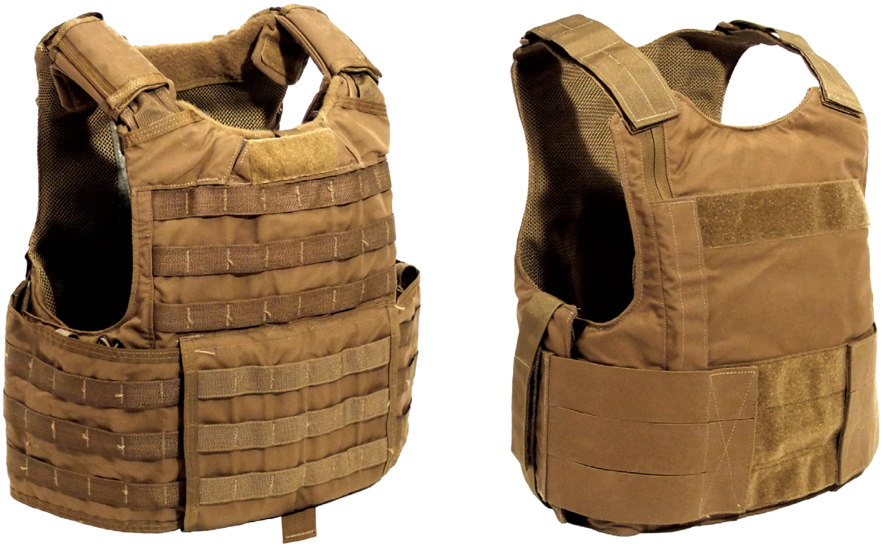
Around this time, Systems Command was developing a new infantry rucksack and load-carriage equipment under the Improved Load-Bearing Equipment (ILBE) program, independent of CQBE. Two versions of the pack, a derivative of a commercial alpine model by Canadian manufacturer Arc'teryx, were produced: a standard infantry pack (S-ILBE) and a reconnaissance pack (R-ILBE). Each pack was part of a set, including a smaller assault pack and other supplemental bags and carriers. The R-ILBE was fielded in 2005 to reconnaissance Marines and later to MARSOC upon its establishment in 2006; however, like the S-ILBE issued to infantry units, it was not well received. Most recon Marines opted to keep their ALICE packs or purchase new commercial designs, though the Reconnaissance Assault Pack from this set was sometimes seen in use with FSBE equipment.

Changes to CQBE since 2006

In the years following release of the second-generation CQBE kits, SOCOM troops (including MARSOC) capitalized on advances in individual equipment design, but Marine Corps recon equipment did not advance. Within the space of only a few years, what had once been cutting-edge designs began to look antiquated in comparison to the latest "high-speed" gear used by SOCOM. Influenced by several considerations, including changes in procurement rules, the Marine Corps made changes in 2010–12 to a large number of its equipment programs, including the Gen II FSBE, and MIAK and MABK components of CQBE.

Sweeping changes to Gen II FSBE were deferred for the moment, but in 2010–11 upgrades to body-armor carriers were being considered under the


The Reconnaissance ILBE pack system was designed with a larger cargo capacity than the standard infantry version. It included (left) a 5,500 cubic inch main pack, a 2,300cu/in assault pack (right), two 500cu/in accessory pouches (top), and (bottom) a recon-specific radio carrier. It was not popular with the recon Marines and MARSOC operators who received it in 2005–06; complaints included the poor fit of the main pack over body armor (it wobbled), and the unsuitability of an alpine-type pack for certain missions. (Author)



An order for two new FSBE Gen II vest designs was placed in December 2011. The Releasable Body Armor Vest (left), a design adopted from the SOCOM SPEAR program, was chosen to replace the MS-CIRAS. A new low-visibility design (right) was developed as a replacement for the original PACA low-visibility vest, but it proved unpopular. (Author)

Improved Armor Carrier Suite (IACS) program. After much debate, the Releasable Body Armor Vest (RBAV) from the SOCOM SPEAR program was chosen to replace the MS-CIRAS, and a new vest was designed at Systems Command to replace the original PACA low-visibility vest. The RBAV vest, though no longer one of the latest, was a much lighter evolution of the CIRAS, with provision for the side-armor plates that the CIRAS lacked. The new low-vis vest, designed by Sysems Command as a CVC vest and repurposed for the FSBE program, was something of a disappointment to recon personnel. Constructed of heavyweight Cordura fabric, it was a bulky assemblage of compartments and straps that counteracted any utility as a low-vis vest. A contract for the new vests was issued in December 2011 for production throughout 2012. New FSBE Gen II kits were also ordered at this time; these incorporated only a small number of changes from those produced on earlier contracts.

MIAK and MABK were also given incremental updates in 2012, including a larger selection of combat knives. Another change affected acquisition: unlike 2005 MIAK, which was purchased in complete kit form, items from the 2012 MIAK were purchased singly by commanders, allowing for flexibility in choice from amongst the expanded options.

The three new kits (FSBE Gen II, MIAK and MABK), taken together with the older Assault Suit and Assault Gas Mask (which had not changed), should be considered a second generation of CQBE, though the name of this program was starting to lose currency around the time of the release of FSBE Gen II, and would eventually be all but forgotten at Systems Command as the three new kits began to be thought of as independent entities. At the present day, FSBE Gen II, MIAK and MABK are the only active components of CQBE. The Assault Suit has effectively disappeared, following absorption of some of its components into MIAK, and the emergence of FROG and EFRE – flame-resistant combat clothing now worn throughout a deployed task force including recon Marines. The MCU-2A/P Assault Gas Mask is still available on paper, but budget cuts have forced a reliance on the standard infantry M40 and M50 series masks in the past decade.

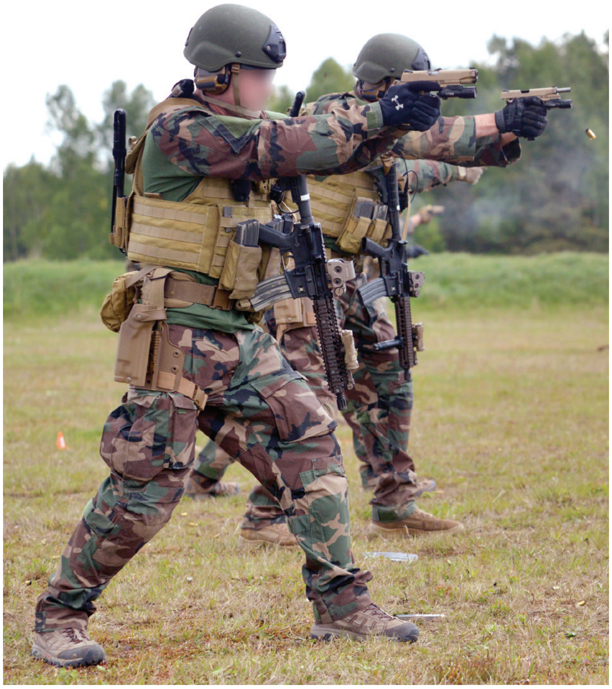
MARSOC'S EQUIPMENT CHOICES

As members of US Special Operations Command, MARSOC personnel have access to a wide range of SOCOM equipment and weapons beyond those available to other Marines through Systems Command. This additional equipment emphasizes mobility, at some cost to durability and protection. SOCOM provides equipment from its SPEAR program to deployed MARSOC personnel, providing logistical support in the field. The SPEAR program is broad, encompassing environmental protective clothing, body armor – including vests, helmets and protective eyewear – load-carrying equipment, communications headsets, and CBRN equipment. This “double-dipping,” as some have described it, plus a developed penchant for unit and personal purchases, makes any search for a MARSOC standard relatively futile. In MARSOC, non-uniformity has become the uniform.

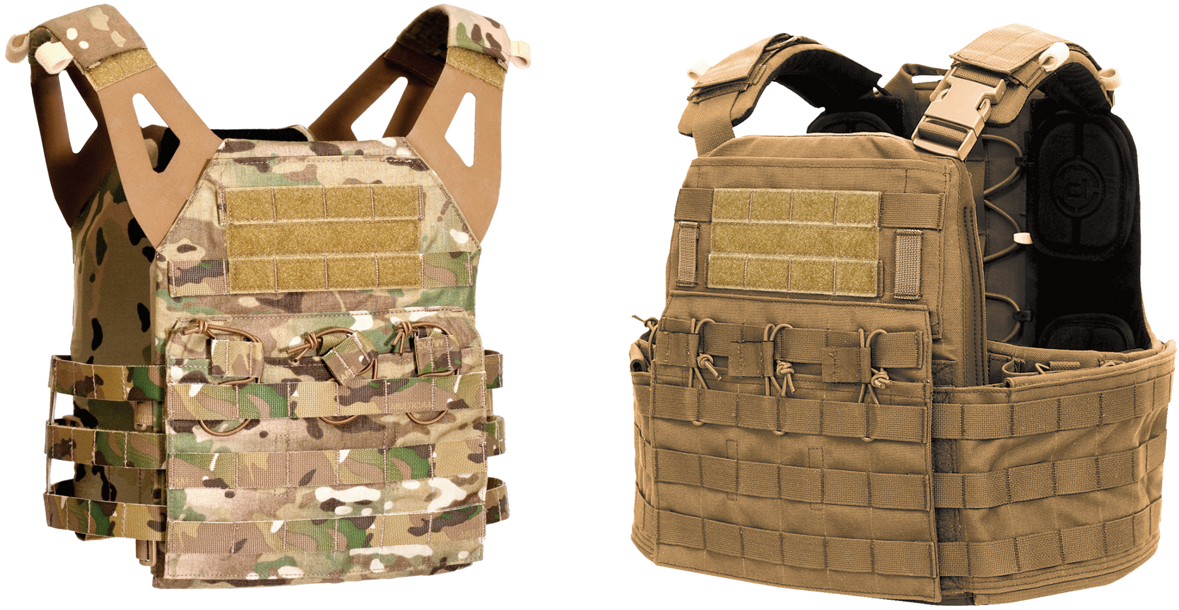
Specialized flame-resistant clothing worn by MARSOC personnel in the field includes the G3 combat uniform, procured from Crye Precision in 2010 in NATO Woodland-pattern fabric for use in Afghanistan. This ensemble replaced stocks of old Woodland utilities (the joint-service Battle Dress Uniform) requisitioned to match the Woodland uniforms of the Afghan National Army, with which MARSOC teams work closely. More recently, a Woodland camo version of the flame-resistant Fortrex, by clothing manufacturer Drifire, has been issued. Protection from the elements is provided by the SPEAR Protective Combat Uniform; the PCU includes a wide range of lightweight, compressible (“packable”) clothing for wear in cold and wet environments. Initially produced in alpha gray through both its initial Block 0 version and Block 1 revision, the current Block 2 PCU is available in both the original color and in coyote brown.

SPEAR armor and load-carriage systems, which began with the ELCS and original BALCS developed in the late-1990s, were in their third and second generations, respectively, when MARSOC was created in 2006. In addition to their Gen II FSBE body armor (and any non-standard armor-carrier vests brought with them from their parent Force Recon companies), the new MARSOC personnel were given access to the older, second generation SPEAR MAR-CIRAS vests, and the new SPEAR RBAV and MBAV vests that were beginning to replace the CIRAS in SOCOM units. Also issued was a SPEAR low-visibility vest similar to the PACA vest with which Marines were familiar, but which had shirttails for additional stability.

The SPEAR BALCS program also included the Modular Supplemental Armor Protection (MSAP) kit, which provided side plates and other equipment for use with the MBAV and RBAV vests. MARSOC drew up, in consultation with the SOF office at Natick, specifications for its own component of the SPEAR family of service-specific Special Operations Forces Load Carriage Systems (SOFLCS), calling it the Marine Corps Load Carriage System (MCLCS – confusingly, also



May 2014: MARSOC critical skills operators (their faces obscured here) practicing weapon transitions on the range. These Marines wear Drifire Fortrex flame-resistant uniforms in Woodland camouflage, and are equipped with MBAV vests and pouches from the Marine Corps Load Carriage System, which is a SOCOM analog of FSBE. (Gertrud Zach/US Army)



The Crye Jumpable Plate Carrier, JPC (left), and the Crye Assault GEar or CAGE Plate Carrier, CPC (right), are two body armor carriers used by MARSOC critical skills operators. They are made of extremely lightweight materials and have a great deal of flexibility built into their designs; the lightest of them, the JPC, weighs just over 1 lb before insertion of armor. They have been acquired both in coyote brown and in MultiCam, which has proven extremely effective in the varied landscape of Afghanistan, MARSOC's primary theater of operations. (Crye Associates)

the acronym for the "Marine Load Carrying System," an early USMC name for MOLLE during its development.) This kit drew from the same basic components used in the creation of Gen II FSBE and the other existing SOFLCS kits, and closely resembled them.

As with FSBE, MCLCS individual and platoon kits were created and standardized. The kit contents were similar to the load-carriage portion of Gen II FSBE and MIAK, with minor differences in some items and the addition of new pouches to hold demolition equipment. As with other SPEAR load-carrying equipment and body armor at that time, MCLCS kits were produced in both khaki and ranger green versions, giving MARSOC personnel options more closely matching desert and temperate environments than coyote brown FSBE equipment.

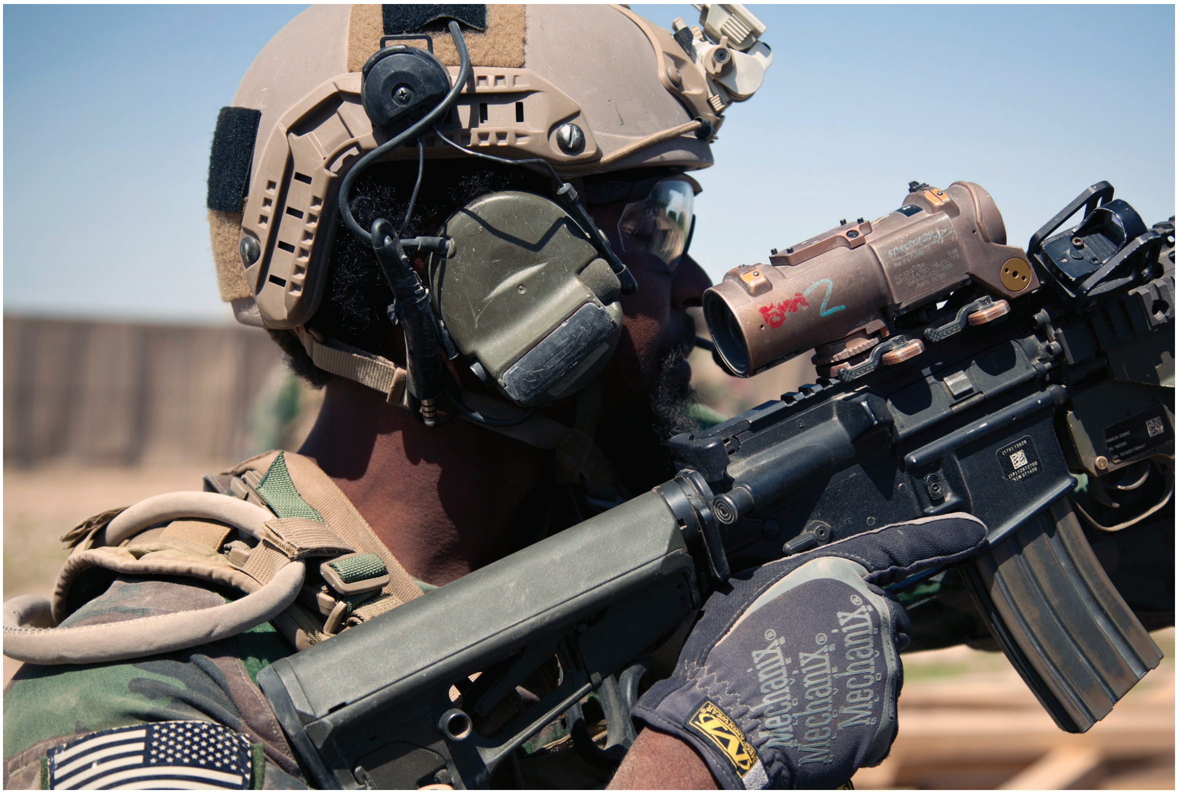
Changes since 2009

MCLCS was revised in 2009, to include most items in a lighter-weight 500-denier Cordura, following the general trend in other branches of the SOFLCS family. Some items were tweaked in design, and others added. The most important changes were the addition of two new packs – the Eagle Beaver Tail Assault Pack to the individual kit, and the "117" pack (to hold an AN/PRC-117 radio) to the platoon kit, as well as additional ammunition pouches and bags. Like the earlier version, the new MCLCS kits were produced in both khaki and ranger green.

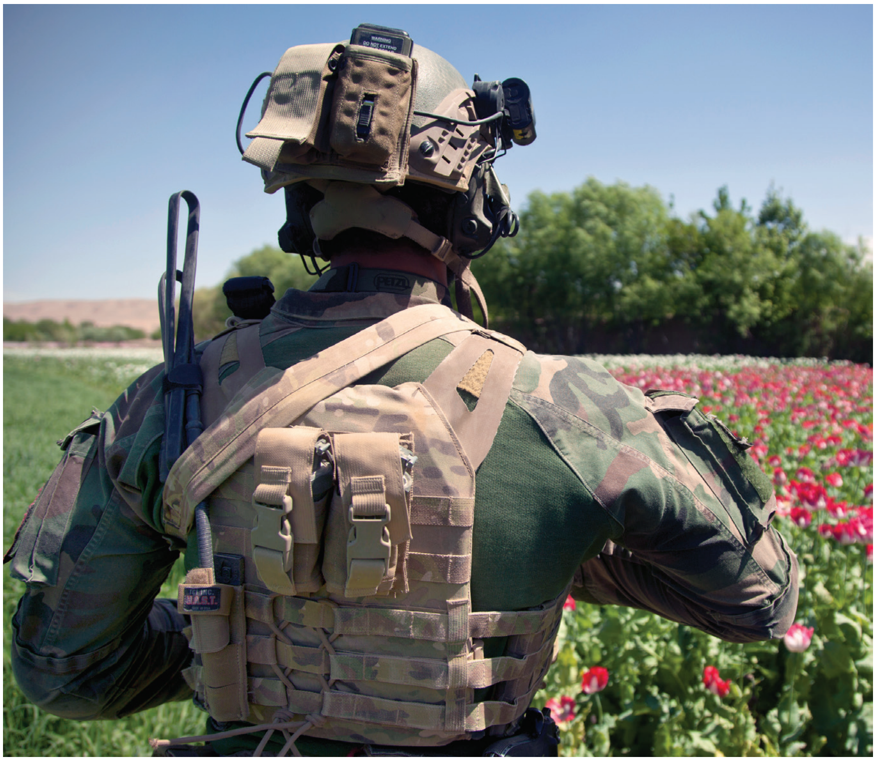
In 2010, SOCOM procured two new low-visibility vests, both from Crye Precision: the LV-MBAV and LV-RBAV, contoured to MBAV and RBAV ballistic insert profiles, respectively, and manufactured in a yellowish khaki color. MARSOC Marines often wear the LV-MBAV when not needing a full set of load-carrying equipment – the skeletonized PALS webbing on the sides can accommodate a minimal arrangement of pouches. Crye Precision has also been tapped for a number of recent plate carriers: the Adaptive Vest System or AVS (not to be confused with the Assault Vest System from the first-generation CQBE ensemble); Crye Assault Gear – or CAGE – Plate Carrier (CPC), and Jumpable Plate Carrier (JPC), which for lightness and flexibility represent the current state of the art in this specialized niche of the textile industry.

Helmets used have included the standard TC-2000 MICH, and to a limited extent the TC-2001 cutaway MICH. In 2010, following discussions between SOCOM and Natick, the lighter Ops-Core FAST helmet was purchased for special-ops troops. Made from advanced lightweight composite materials, FAST variants resemble the TC-2002 "gunfighter" cutaway version of the MICH in overall profile, but are much lighter, and feature an advanced suspension and ARC rails. These rails are frequently used in conjunction with Peltor ComTac headphones mounted via rail adapters. MARSOC uses the Maritime FAST, the lightest of the FAST models (42 percent of the weight of the standard TC-2000 MICH) for missions where situational awareness and mobility are especially important, and the MICH when greater protection is preferred. In addition to the Maritime-variant FAST, a number of High-cut (XP) FAST helmets are also used.

MARSOC chose to go its own way with respect to rucksacks. Special operators take their packs very seriously, displaying brand and type loyalty second only to their choice of body armor. In the first few years MARSOC operators exercised the same degree of personal freedom in selecting their packs that they had enjoyed when serving with Force Recon. An initial "official" MARSOC assault pack was the 2009 MCLCS Beaver Tail pack (which supplemented the MAP and patrol pack available from FSBE), but aside from the much-disliked R-ILBE provided to them by Systems Command no standard large pack yet existed. When SOCOM began evaluation of a number of designs in 2008 to create a suite of standardized packs MARSOC was not completely satisfied with the selections, though some, such as the



MARSOC operator manning a security checkpoint in Helmand Province, Afghanistan in March 2013. He wears an Ops-Core FAST helmet with ARC rails, and a Peltor Dual ComTac II headset. His M203-equipped carbine has an SU-230/PVS telescopic sight and offset-mounted "red dot" reflex sight. Note the reversed US flag IFF patch on his right shoulder; these were apparently designed because of a tradition that the "stars" should never be depicted facing backwards. (Sgt Pete Thibodeau/USMC)



This CSO, photographed in a Helmand Province poppy field in April 2013, wears a Fortrex flame-resistant combat uniform under a lightweight Crye Jumpable Plate Carrier; again, note the "wicking" fabric of the shirt torso contrasting with camouflage-fabric areas. On his helmet is a commercial "ballast" pouch carrying a strobe light and spare batteries; these counterbalance the weight of the night vision goggles at the front, improving helmet stability on night missions. (Sgt Pete Thibodeau/USMC)

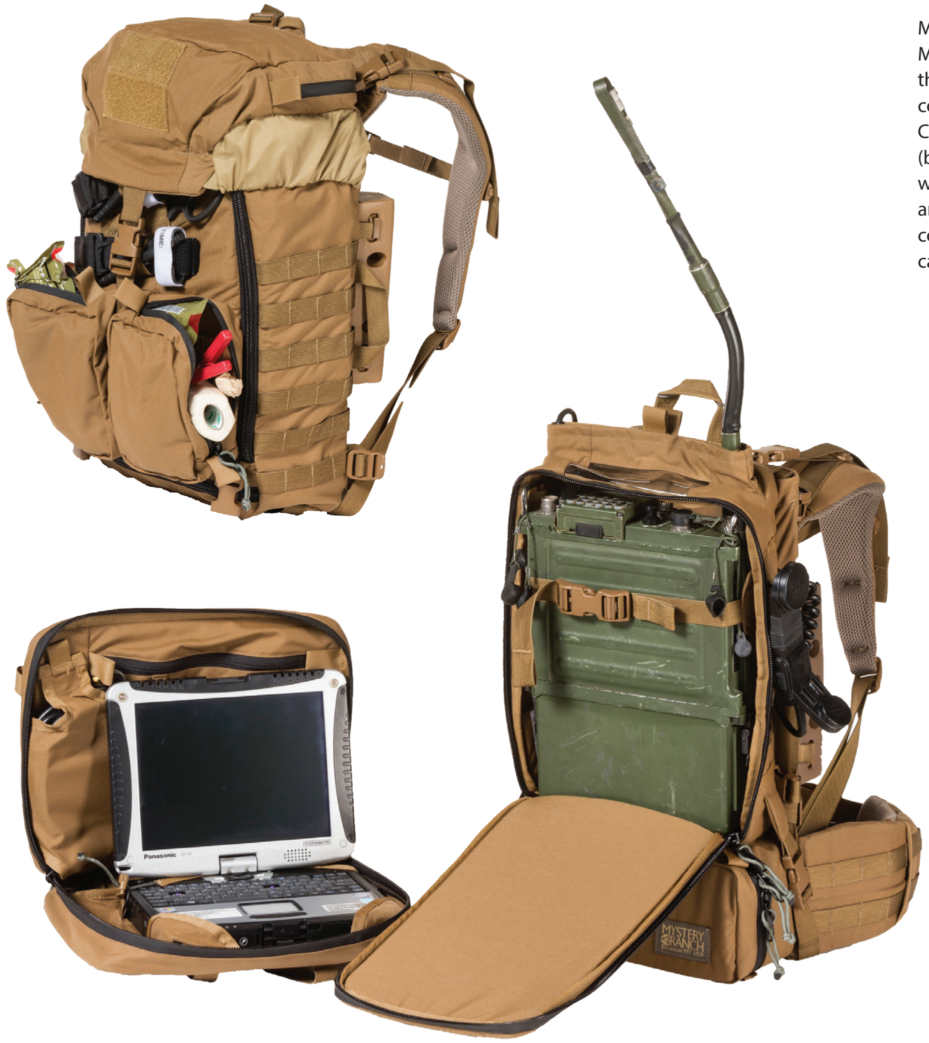
Mystery Ranch SATL, were used. In 2012 MARSOC initiated a search for a set of standard packs to meet their own specifications. They adopted two available packs from Mystery Ranch for general use, including the innovative 3,000 cubic-inch NICE Overload 3 Zip BVS with detachable day pack, and the 3 Day Assault BVS pack. Later MARSOC procured two additional packs from Mystery Ranch: the NICE OMM 3 BVS for radio operators, and the RATS Pack for their attached SARC corpsmen.

OTHER INDIVIDUAL EQUIPMENT

The popularity of both standard infantry web equipment and private-purchase gear in Force Recon underwent a sharp decline with the introduction of first-generation FSBE in 2000. That such alternatives were no longer needed was a testament to the designers at Natick and the programs underpinning their work. A lack of commercial alternatives compatible with the new PALS system was another contributing factor. Nonetheless, as new needs developed, and as the "tactical nylon" began to catch up, old habits began to reassert themselves.

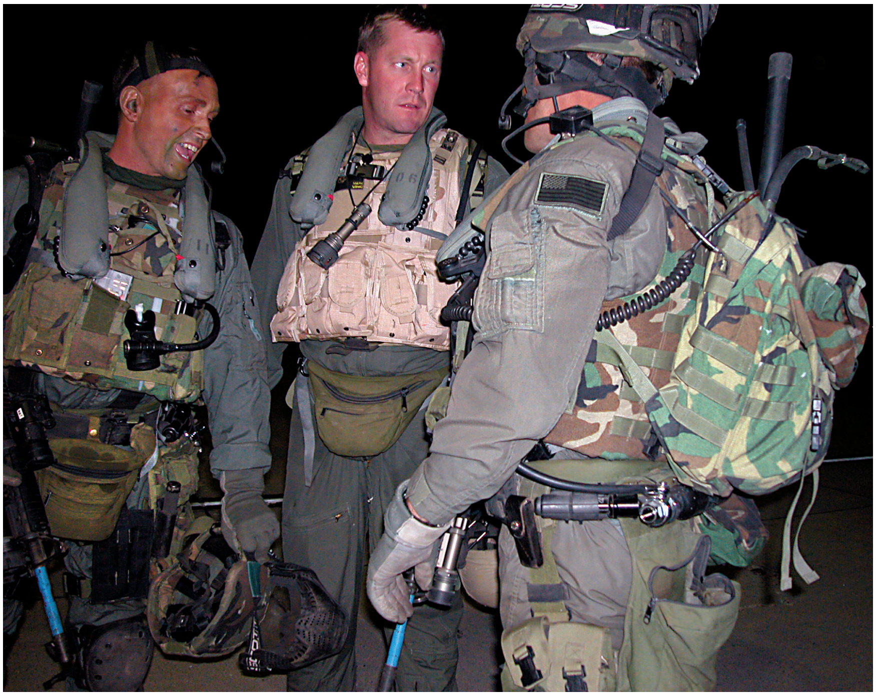
ALICE had not outlived its usefulness, and individual components were used as supplements to personal kit for many years; its greatest success story was the large pack, which continued, in modified form, as the principal large pack of the Interim FSBE era for Force Recon. The large ALICE pack also served as the inspiration for the pack used by Detachment One, which it had ordered from manufacturer CSM in desert-tan nylon prior to deployment. The large ALICE pack continues to have its advocates today, despite inroads made by Mystery Ranch, Granite Gear and other manufacturers.

A number of items from the PALS-compatible kits emerging around the turn of the millennium also found their way to Force Recon. These were often requisitioned through Natick's SOF office as needed, although they



MARSOC uses a number of Mystery Ranch packs, including the RATS BVS medical pack for corpsmen (top), and the NICE COMM 3 BVS radio pack (bottom). The latter is shown with an AN/PRC-150(C) radio, and Toughbook laptop computer in a removable carrier. (Mystery Ranch)

were also sometimes obtained by individuals. Marine reconnaissance battalions, as divisional assets, were issued MOLLE and MOLLE II at this time, as were Navy corpsmen attached to them. Force Recon was not authorized to receive these kits, but it did receive several MOLLE pouches through Interim FSBE, and made *ad hoc* purchases of MOLLE components. A few Force Recon Marines acquired and used the revised and vastly improved internal-frame MOLLE II main pack. Force Recon Marines found that the MOLLE medical pack made an excellent satchel-charge carrier. The one-piece MOLLE II Fighting Load Carrier (FLC) was also requisitioned by many Force Recon personnel in later years, even though an FLC-equivalent SOF Field Load Carrier was provided in Gen II FSBE – this new FSBE vest had been relegated to the platoon kits, which limited access by individuals. Force Recon Marines also made some use of the SPEAR ELCS load-carriage harness and vest, which featured a canted PALS ladder that some preferred. The old IIFS Tactical Load Bearing Vest also had its partisans, and could be seen (if rarely) in use by recon Marines long after the introduction of Gen II FSBE. Much gear selection in recon and special-ops units continued to be very much a matter of personal preference.



Although Interim FSBE was highly regarded by the Force Recon companies receiving it, and bridged the divide between patrolling and direct-action gear, equipment was still by no means homogeneous. These Force Recon Marines on an exercise wear a mix of FSBE and other items, including E&R (evasion and recovery) "belly" bags made by a teammate, and an old AVS drop pouch. Note (center) the FSBE Amphibious Assault Vest in tricolor desert camouflage, and pinkish tan MBSS pouches, as requested by some platoons deploying to Iraq in 2003. (Patrick A. Rogers)

Areas of operation in the opening phases of the wars in Afghanistan and Iraq proved incompatible with the green and black tones in the Woodland camouflage material used in Interim FSBE, so many Force Recon personnel painted over their equipment in broad strokes of desert-tan paint, often with a paint roller. As an alternative, other platoons deploying to Iraq in 2003 requested issue of SEAL MBSS kits, which were available in a suitable desert color. The early examples they received were produced in the reddish-hued

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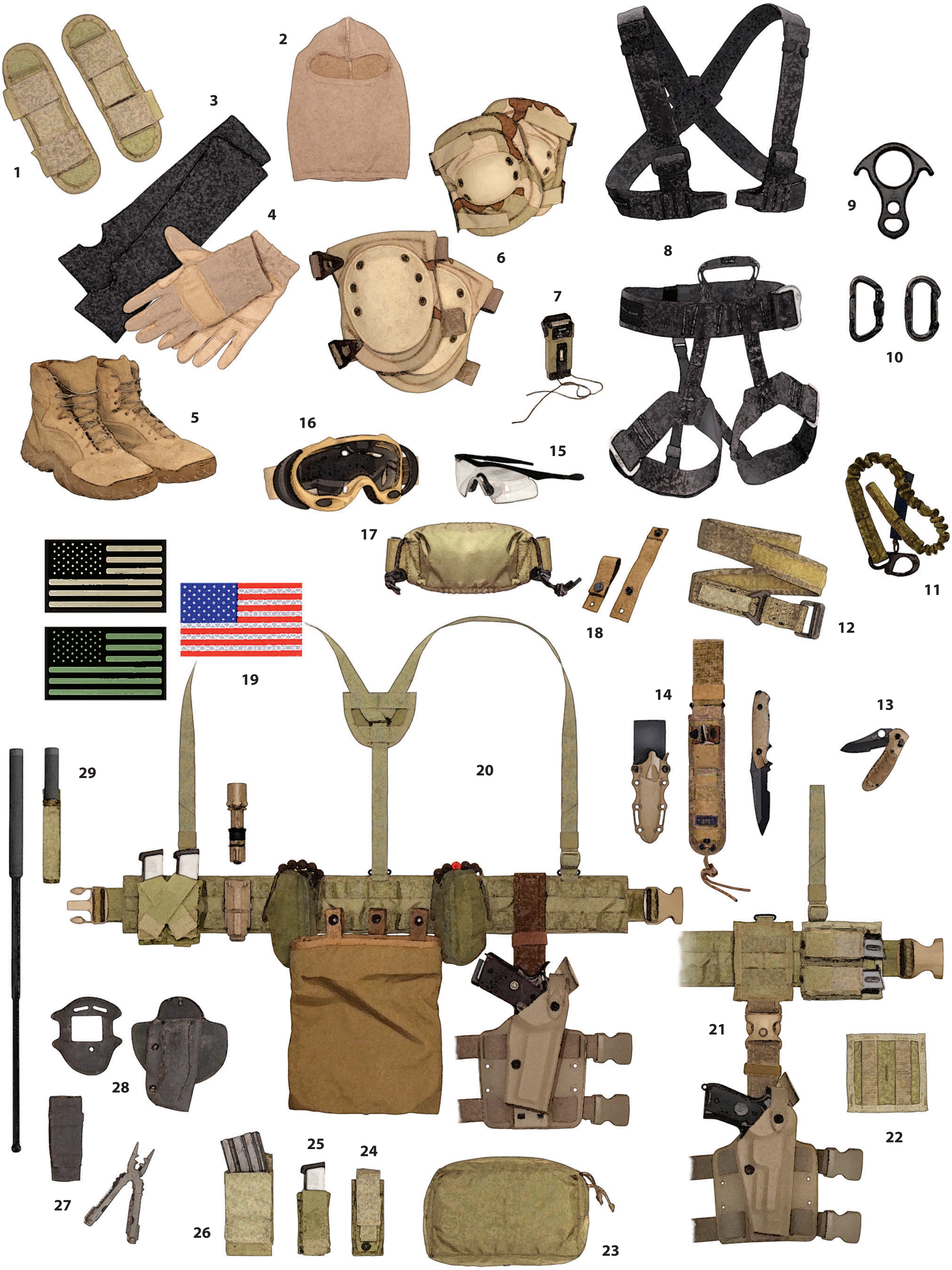
MARINE INDIVIDUAL ASSAULT KIT

Formalized early in 2005, the MIAK is an update to the IAK introduced in the late 1990s; though generally similar, it has updated PALS-compatible web equipment for integration with FSBE Generation II. Most web components of MIAK are manufactured in khaki, though some have been made in coyote brown – practice has varied over time and between manufacturers. This overview shows the initial configuration, prior to revisions formalized in 2012. Contents included:

Armor vest shoulder pads **(1)**; flame-resistant balaclava in olive-green or tan **(2)**; Kevlar protective sleeves **(3)**; Protech SIG "Shorty" gloves in olive-green or tan **(4)**; Oakley 6in Assault Boots **(5)**; Alta knee and elbow pads **(6)**; MS-2000(M) strobe **(7)**; Vario chest and sit harnesses **(8)**; figure-8 descender **(9)**; locking D and oval carabiners **(10)**; personal tether **(11)**, and mission belt **(12)**. Benchmade 550 Griptilian **(13)** and Nimravus **(14)** knives, the latter issued with initial hard and later fabric sheaths; Oakley M-frame ballistic glasses **(15)**; Oakley Assault Fan Goggles **(16)**, Eagle Industries goggle cover **(17)**, and helmet goggle retention straps **(18)**. Velcro-backed IFF 3.5in x 2in infrared-reflective US flags in subdued and full colors **(19)**; flag patches are issued in standard and reversed orientations for attaching to clothing and equipment.

A typical MIAK gun belt rig **(20)** comprises the new Padded War Belt and suspenders, with (left to right) .45cal two-mag speed reload pouch (with flaps crossed to take up slack); Surefire G2Z combat light with holster; two-piece TFSS flotation device (the issued but seldom-seen web belt not illustrated), with between its elements a CSM dump pouch; and Safariland SLS M1911 holster for M45 pistol (an alternative holster to accommodate a pistol fitted with a weapon light is not shown). **(21)** shows a Beretta M9 SLS holster suspended by a MIAK sub-belt extender, and a double magazine pouch with the MIAK horizontal adapter – also illustrated as **(22)**.

Additional web gear includes a utility pouch **(23)**; M9 single mag pouch **(24)**; .45cal single-mag speed reload pouch **(25)**; and M4 single-mag speed reload pouch **(26)**. Other MIAK items include the Gerber Multi-Plier 600 DET **(27)**, a leather concealable holster with belt-loop adapter **(28)**, and a 26in collapsible baton with Cordura scabbard **(29)**. Components not illustrated for lack of space include additional climbing equipment, another model of Benchmade knife, pistol mag pouches, hearing protection, weapon-light spares carrier, and flexible restraints for detainees.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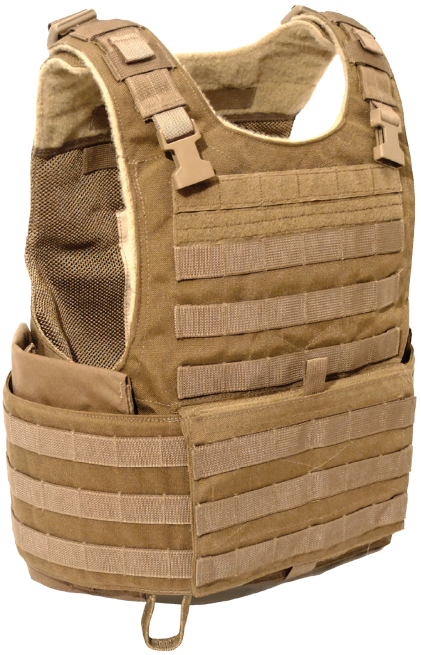


Designed by industry to 2nd Force Recon Co specifications in 2006 to address a shortage of CIRAS vest covers, the Marine Combat Armor Vest, MCAV, subsequently acquired a life of its own, and its commercial success continued for years after the initial order. (Author)

"pinky tan" that preceded khaki on some web equipment (officially, Light Tan 492, one of the three colors of the tricolor desert camouflage in use at that time). Complementing this kit was a specially-ordered AAV cover in tricolor desert camouflage. That was also the finish of the MOLLE equipment received by later-deploying Force Recon platoons.

A number of commercial and improvised products rounded out the gear provided in Interim FSBE, much of it begged or borrowed from other Department of Defense programs. Defense contractor Eagle Industries supplied a number of stock items made at Force Recon's behest: Eagle's RAID and A-III Airborne assault packs proved popular, as did a new M4 speed-reload pouch, a 6-grenade leg panel, and an MBITR radio pouch that fitted better than the multipurpose FSBE SABER pouch. A breaching-tool carrier made from a short length of PVC pipe was introduced; such homemade expedients were supplemented by a more "polished" version by Diamondback Tactical.

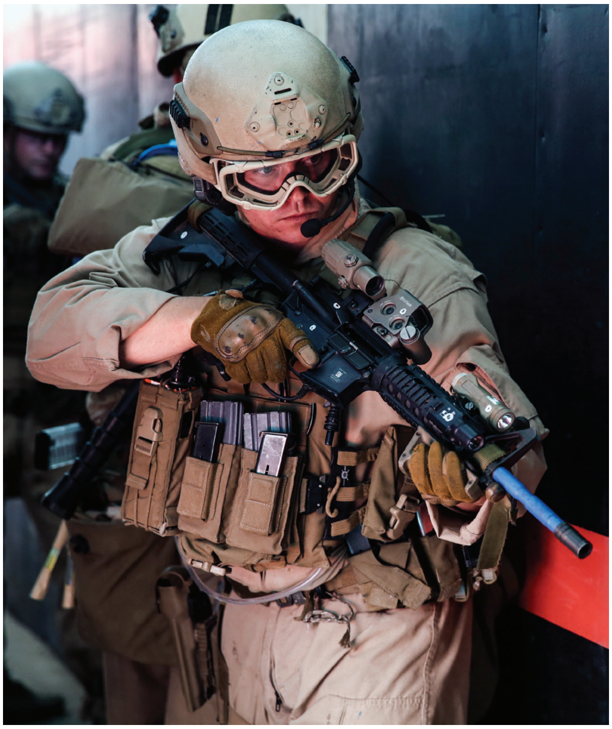
Tactical equipment designer Matt Johnson got his start at this time, developing niche gear for 1st Force Recon Co teammates through his start-up company, Mission Specific. Particularly popular were Johnson's custom pouches, a wrist pocket for the new Garmin 12 GPS receiver, and E&R (evasion and recovery) "belly" bags, an item later integrated into Gen II FSBE. The Pistol Leash by company 5.11 and newer, breakaway designs have been used to secure sidearms and other equipment in place of the official issue lanyard or the expedient use of coiled telephone handset cable. As companies sprang up, fueled by a surge in demand created by the "long war" in Iraq and Afghanistan, far too many creative commercial designs emerged to mention in a book of this size. The current trend is toward lightweight laser-cut textiles, and molded thermoplastic gear – such as the FastMag hardshell speed-reload magazine caddies by ITW Nexus that are currently popular in the recon community.

Eye protection was still diverse in the early years of IAK. Units and individuals purchased glasses and goggles by Oakley; the Bollé T-800, and others, could also be seen alongside the official IAK models, the only hard rule being that ballistic protection standards were met. Much of this diversity disappeared with the issue of MIAK in 2005. Very few exceptions to the rule in ballistic helmets have occurred, aside from accidental issue of a small number of TC-2001 side-cut MICH helmets to Force Recon in 2001 and their limited later use in MARSOC. More recently, fielding of the Enhanced Combat Helmet (ECH) began in 2014 and is expected to replace other ground troops' helmets in coming years. Currently, helmets are often modified by the addition of Ops-Core ARC rails for attachment of lights, communications equipment and other accessories.

A number of alternative body armor carrier vests have been used since the fielding of Gen II FSBE. Replacement low-vis vests have often been run up by "sew shops" in the US or by local tailors abroad. This has been necessary both because of the delicate nature of the thin cotton fabric of the original PACA vests, and limited access to fresh water in combat areas for regular cleaning and maintenance. Some of the replacements sport modifications such as Velcro patches for ID plaques, and even PALS ladders. In response to a shortage of CIRAS replacement covers in 2006, 2nd Force Recon Co commissioned retired

Marine scout sniper and gear designer C.J. Quinlan to design a new vest for them. Quinlan, who had recently been tasked with the design of the USMC Modular Tactical Vest following his successful Spartan II armor carrier, developed a design for them which he called the Marine Combat Assault Vest (MCAV). Many 2nd Force Recon Marines took these vests with them when they transferred to form the cadre of MARSOC later that year.

The current general-issue USMC Plate Carrier or PC, a well-thought-out design based on a decade of wartime experience, has proven immensely popular, having a good balance of armor coverage and weight, and featuring a quick-release mechanism. Many Force Recon Marines wear this in place of their FSBE vest; recently, commercial improvements to the quick-release design have become available. One used by recon Marines is the Derma Universal Cummerbund Kit (DUCK) by Ares Armor. Designed by a retired Marine and former FSBE user, the DUCK attaches to several types of cummerbund-pattern vests, providing a quicker means of ditching body armor in an emergency.



By 2014 many in the reconnaissance community felt that Gen II FSBE was becoming dated, and unit purchases of commercial alternatives and enhancements were becoming common. Typical modifications are seen in this October 2014 photograph of a 15th MEU Force Recon Marine: the cummerbund of his USMC Plate Carrier has been exchanged for a Derma Universal Cummerbund Upgrade Kit by Ares Armor, which provides a faster release mechanism, and the utility of his MICH has been improved with the addition of Ops-Core ARC rails. (Cpl Anna Albrecht/USMC)

Overall, non-standard equipment has again become something of a free-for-all in recent years, reminiscent in some ways of the pre-FSBE era, but the Corps is now beginning to discourage this practice.

OBSERVATION, TARGETING & COMMUNICATION EQUIPMENT

Day telescopes and binoculars

The standard service telescope was for many years the 20x M49, but 1st Force Recon has purchased a number of Kowa TSN-822 telescopes. A successor to the M49 appeared in 2009 in the form of the Scout Sniper Observation Telescope (SSOT) by Horus Vision. Standard binoculars include the 7x50 M22, and more recently the 7x28 M24 and 8x42 Tactical Infantry Binocular, along with other models by manufacturers such as Tasco, Steiner and Leupold.

Night vision devices

These have given American forces a decisive advantage against low-tech insurgent adversaries in nighttime operations in Iraq and Afghanistan. There are two basic technologies: the first uses a photomultiplier tube to intensify ambient light, the other registers infrared thermal emissions to form images. Yet a third type is the hybrid device, which combines the other two to present a composite view.

Night vision goggles (NVG), worn affixed to a helmet or (more rarely) to a headband suspension, are at present primarily of the photomultiplier type, but as the size and weight of thermal units are decreasing through the

MARSOC joint terminal attack controllers coordinate close air support during training in December 2007. The Marine in the foreground operates a SOFLAM laser target designator; his helmet masks a teammate on his right, who peers through a Vector 21 Nite rangefinder. (Lance Cpl Stephen C. Benson/ USMC)

development of new devices not requiring cooling, these are beginning to become more popular. Reconnaissance Marines have gone through the progression of photomultiplier NVGs from AN/PVS-5 in the 1980s, through AN/PVS-7, to the AN/PVS-14 Monocular Night Vision Device (MNVD). The last two are single-tube third-generation NVGs. Through its SOCOM affiliation, MARSOC has access to the AN/PVS-15, a true binocular NVG; this gives depth perception, but does not allow one eye to remain dark-adapted as with the AN/PVS-14. The Marine Corps keeps a second type of binocular NVG in inventory for close combat, parachuting and vehicle operation.; this AN/PVS-21 Low Profile Night Vision Goggle (LP-NVG) incorporates a head-up display for presentation of tactical information from other sensors and systems.

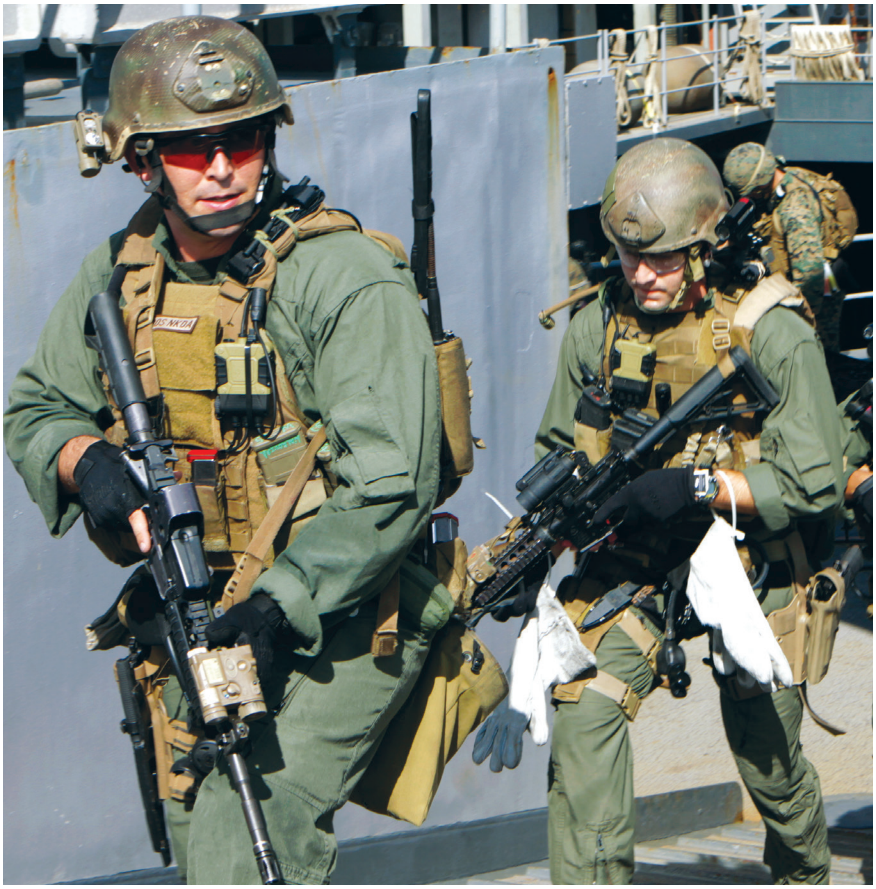
A new Army development in service throughout the US military is the AN/PSQ-20 Enhanced Night Vision Goggle (ENVG) monocular, a hybrid thermal/image intensification goggle. A third-generation device that is nearing production will link to modern rifle scopes, to present a sight picture to the wearer without him having to look down his weapon sights, thus allowing “around-the-corner” shooting.

NVGs are attached to helmets by means of a quick-disconnect mounting that attaches to a bracket or shroud fixed to the helmet; some mounts offer a “breakaway” feature in case of emergency during fast-roping, parachuting, etc. Recon Marines initially used the standard ground forces single attachment point (“single screw”) helmet bracket with the Norotos Standard Rugged Helmet Mount or “rhino”. They later exchanged these for the black plastic Norotos three-point “shrouds” as these became available; their three attachment points gave greater stability, but the molded shroud was not compatible with the standard mount, and was initially used with the Norotos TATM. The early shrouds have given way to the Norotos Universal shroud, which accepts all types of mounts, and the VAS shroud, which comes standard on Ops-Core helmets and is often purchased along with ARC rails for other helmets. Other helmet brackets by Wilcox have been used extensively by MARSOC units and by some organic USMC elements such as ANGLICOs.

In addition to NVGs the Corps fields two handheld thermal imagers: the AN/PAS-23 Mini Thermal Monocular (MTM), and the AN/PAS-28 Medium Range Thermal Bi-ocular (MRTB). The MTM is a lightweight, pocket-size unit (which can also be helmet-mounted) that permits observation and image acquisition; it also contains IR and visible-light laser pointers. An improved MTM-PI now exists. The dual-purpose MRTB, used for both observation and fire-direction. captures still and video images at ranges of up to 550m; it has an integrated laser pointer and an onboard compass.

Target designators

A number of devices are used to designate targets and other points of interest for, e.g., air strikes or mortar and artillery fires. Often these differ only in degree from observational telescopes and binoculars, having more sophisticated range-finding ability or additional components such as GPS, compass and laser designator. The simplest devices in this class are laser pointers, which can be handheld or mounted in conjunction with other equipment. The LPL-30/Z was replaced in Force Recon companies in about 2000 with the Ground Commander's Pointer and AN/PEQ-4 laser pointers. More recently, the AN/PEQ-18 High Power Laser Pointer (HPLP), also known as the Infrared Zoom Laser Illuminator Designator (IZLID) and formalized in 2002, has become standard.



A number of headsets featuring active sound attenuation have seen use by Marines in the past decade, including the Silynx C4OPS com sets worn by these Force Recon Marines in October 2012. This digital signal processing system uses adaptive algorithms to analyze the waveform of background noise, and generates an "antiphase" signal that reduces its volume. (Lance Cpl Vernon T. Meekins/USMC)

Target designators introduced into recon units around the turn of the millennium include the SOPHIE Long Ranger Target Indicator (LRTI) thermal binoculars and camera – since replaced by the AN/PAS-22 LRTI; and DRS Technologies' Nightstar 3-power night vision binoculars. A step up from a standard image intensifier, the Nightstar incorporated a laser rangefinder and pointer, and was equipped to transmit data electronically as a target designator should. Other equipment includes the AN/PEQ-1A Special Operations Forces Laser Acquisition Marker (SOFLAM), Vector 21 binoculars/ target designator, and AN/PEQ-17 Portable Lightweight Laser Designator /Rangefinder (PLDR). The AN/PEQ-19 Joint Terminal Attack Controller Laser Target Designator (JTAC LTC), ordered in 2009, will supplement the PLDR.

Surveillance equipment

Of particular importance to reconnaissance is a photographic surveillance system known as the MAGTF Secondary Imagery Dissemination System (MSIDS). Consisting of a digital camera, portable computer and printing equipment, it allows rapid acquisition and transmission of images to force headquarters. This equipment was evaluated by the Force Recon companies in 1997 and has been in use, with updates, ever since.

The AN/PRC-152 Multiband Handheld Radio is similar to the older MBITR, but was designed with a software-defined architecture for greater flexibility. This AN/PRC-152 is shown in use with the 2nd Air Naval Gunfire Liaison Company (ANGLICO) in Afghanistan in September 2009; it is carried, as usual, behind the left shoulder of an armor vest or plate carrier, linked by cables to the headset and to a hand control carried on the front. (Sgt Aaron Rooks/ USMC)

Navigation systems

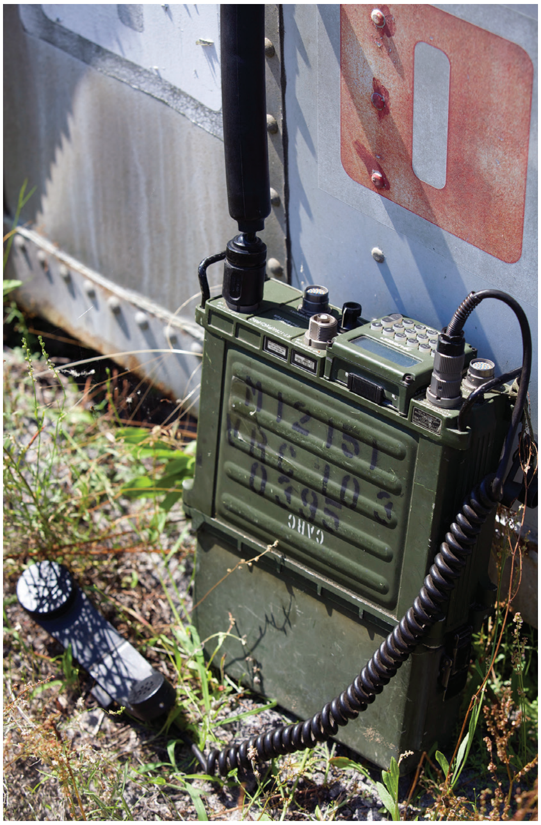
Long-range communications and GPS positioning equipment are obviously important for Force Recon teams. Compactness, light weight, and power efficiency are all important considerations during deep reconnaissance missions, when resupply may be impossible. Team radios take on particular significance during direct-action missions, when coordination and timing are critical. A wide range of capabilities are increasingly becoming available to troops through ruggedized portable computers – laptops, tablets and smart phones.

While handheld magnetic compasses and traditional map-reading are still the main mode of ground navigation, Marines have increasingly benefited from portable GPS devices. Introduced in the early 1990s, the AN/PSN-11 Precision Lightweight GPS Receiver (PLGR) – affectionately called the "plugger" – was the standard handheld device for well over a decade. Equipped with a number of then-advanced features, it could be connected to radios and other equipment to coordinate positional information. Shortages of the PLGR led the Force Recon companies to adopt commercial GPS receivers such as the Garmin 12; this presaged widespread purchases of later Garmin product lines such as the eTrex, Foretrex and Rino by both special-ops and conventional forces throughout the US military. The PLGR was officially superseded by the smaller and more capable AN/PSN-13 Defense Advanced GPS Receiver (DAGR – inevitably, the "dagger"). Compasses and GPS receivers have been integrated into a number of kits, and are especially useful in high-altitude parachuting and underwater navigation.

Communications

Visual signals are used in a number of ways: to mark a drop zone, light a path through a darkened ship, identify friendly forces, or indicate an emergency. Available signaling devices take the form of standard M18 colored smoke grenades, the Mk 13 Mod 0 marine smoke and illumination signal (often taped to the dive knife for swimming missions), Cyalume ChemLight light sticks, and strobes. Types of strobes used in recent years include the SDU-5/E, issued in the IAK, and its replacement MS-2000(M) issued in the MIAK. Additional infrared strobes, recently adopted through unit or individual purchase, include the Phoenix IR, Phoenix Jr, and VIP.

Historically, military radios have been limited to secure, narrowband two-way voice or continuous-wave (Morse code) communication, but advances in the past two decades have transformed the humble military radio into a multitasking data-relay terminal. Modern wideband digital systems transmit voice, imagery, video feeds, and other data in bursts or real-time streaming, using programmable onboard encryption. Portable radios can broadly be divided into two groups: handheld systems used for communication within small teams in proximity – of especial importance in direct action, where coordination and timing are everything – and larger "manpack" radios, used to link the team to the chain of command, often through a secure satellite connection.



The Harris Falcon II AN/PRC-117F Multi-Band Radio (MBR) began to be fielded in the early 2000s. It was one of the new generation of software-defined architecture radios, capable of voice and data transmission and carrying onboard NSA Type 1 encryption, eliminating the need for the separate encryption modules used with earlier radios. (Cpl Aneshea Yee/USMC)

In the 1980s dissatisfaction with existing handheld radio performance in support of the new SOC missions led the Force Recon companies to adopt several Motorola radios, including various models of the SABER, which were widely used by the law enforcement agencies and special-ops communities with which Force Recon had ongoing relationships. Radios were used in conjunction with tactical headsets popular at the time; 1st Force Recon Co used Motorola headsets, while the 2nd used the TEA LASH.

In 1999 both companies began evaluation of the new AN/PRC-148 Multiband Inter/Intra Team Radio (MBITR), developed by Thales Group at the instigation of SOCOM. The new radio featured strong encryption with frequency-hopping, and was able to communicate not only between teammates but with radios of the combat net. The model that was ultimately used by Force Recon was the AN/PRC-148(V)1(C) Maritime radio, which featured a rugged case waterproof to a depth of 20m, and was coupled with the low-noise Davies Maritime Headset. During the early phases of the wars in Iraq and Afghanistan the US military began to procure the AN/PRC-148(V)2(C) Urban version, in response to shortcomings in handheld radio performance in combat. The Urban MBITR is similar to the Maritime version (though only waterproof to a depth of 2m); as the USMC received these radios in quantity they began to issue them to Force Recon in place of the Maritime model in order to streamline logistics.

Around this time, Generation II FSBE was beginning to make its appearance, and Force Recon Marines exchanged their Davies headsets for the new MICH communications kits with quick-detach high- and low-noise headsets (Davies sets continued in use by other Marines). In addition,TCI Liberator II & III high-noise headsets are worn by Marines receiving versions of Gen II FSBE without the communications kit; Peltor ComTac headsets are also commonly used in the field throughout MARSOC, typically with adapters for attachment to helmet ARC rails. Recon and special-ops Marines have also used successive models of Silynx QuietOps active noise-attenuating headsets, which are functionally similar to the Nacre QuietPro models used by infantry.

A second handheld radio fielded alongside the MBITR throughout the USMC and SOCOM is the AN/PRC-152, developed by the Harris Corporation as part of its Falcon III radio suite. Operationally similar to the MBITR, this waveform radio was the first handheld set developed to the standards of the beleaguered and now defunct Joint Tactical Radio System. As part of that certification, it conforms to NSA Type 1 encryption for sending and receiving voice and data transmissions.

Reconnaissance Marines also received much-needed updates to manpack radios. The Vietnam-era AN/PRC-25 and AN/PRC-77 VHF sets in use until the mid-1990s were short-range, line-of-sight radios hardly suitable for deep-reconnaissance missions. The Harris Falcon II AN/PRC-117F Multi-Band Radio (MBR), which appeared in the early years of the 21st century, was one of the new generation capable of voice and data transmission and of onboard encryption, eliminating the need for separate encryption modules. More recently, Harris introduced the improved AN/PRC-117G MBR as part of its JTRS-compliant Falcon III program. Both variants are VHF/UHF short-range, line-of-sight radios, and are typically linked to the combat net by a Trivec Avant UHF satellite antenna.

High-frequency (HF) shortwave band is well-suited for long-range communications, but in the early 2000s its demise was predicted due to the emergence of satellite communications. Real-world limitations have shown this prediction to be premature. Recon Marines have used the AN/PRC-138 HF/VHF radio for deep missions, and this began to be replaced with the

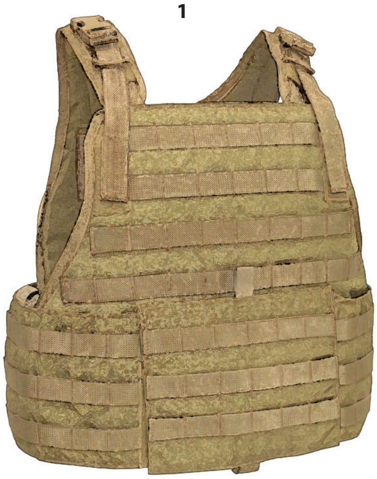
G MARINE SPECIAL OPERATIONS COMMAND EQUIPMENT

MARSOC not only receives USMC equipment such as FSBE Gen II, but has access to a wide range of special-operations gear through its affiliation with SOCOM. It also procures equipment to its own specifications, and unit-level purchases are common, giving its critical skills operators an unprecedented number of options.

These CSOs have access to SOCOM SPEAR BALCS vests, and SOFLCS web equipment. Current SPEAR vests are the MBAV **(1)**; the RBAV (not shown); and low-visibility vests accepting corresponding soft armor, the LV-MBAV **(2)** and LV-RBAV (not shown). MARSOC also uses the Crye Adaptive Vest System, a modular body armor that can be assembled in several configurations – the base configuration is shown as **(3)**. Additional vests such as the Crye CPC and JPC are commonly acquired at unit level. MARSOC uses a number of special-operations helmets including the Ops-Core FAST **(4)**, here shown rigged for a night mission with AN/PVS night vision goggles on an IVNH mount; the counterbalancing "ballast" pouch attached to the rear holds a strobe light and spare batteries (note too the IR-reflective flag panel, attached on both sides).

MARSOC has pursued is own pack specifications, and currently fields several Mystery Ranch products including the NICE Overload 3 Zip BVS **(5)**, shown here below a detachable NICE day pack that doubles as a pack lid, and the 3 Day Assault BVS pack **(6)**. Operators may also be issued the Marine Corps Load Carriage System (MCLCS), the MARSOC component of the SOFLCS family of load-carrying systems. MCLCS is similar to the load-carriage component of Gen II FSBE, and, like FSBE, is produced in both individual and platoon kits.

In addition to the many pouch types provided in FSBE a few unique SOF items are included in MCLCS including, in the initial individual kit: a pen flare pouch **(7)**; single-point leg panel **(8)**; M4 six-magazine pouch **(9)**, and 12-shell shotgun pouch **(10)**. The initial platoon kit also contained a demolition shock tube pouch **(11)**, demolition charge bag **(12)**, and a downward-opening pop flare pouch **(13)**. MCLCS was updated in 2009 to include items made of lighter-weight 500-denier fabric and to provide additional equipment. Both MCLCS kits and SPEAR armor vests are produced either in khaki or in ranger green.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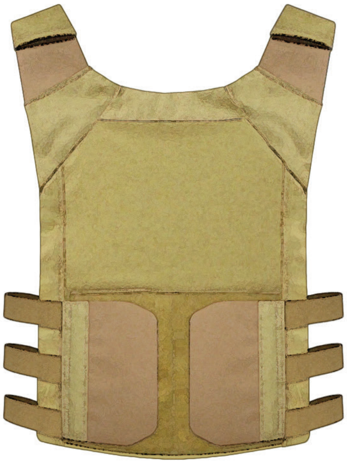
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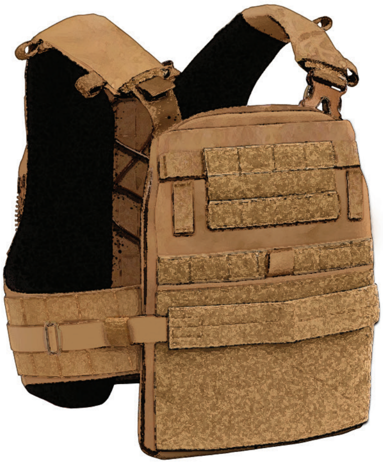
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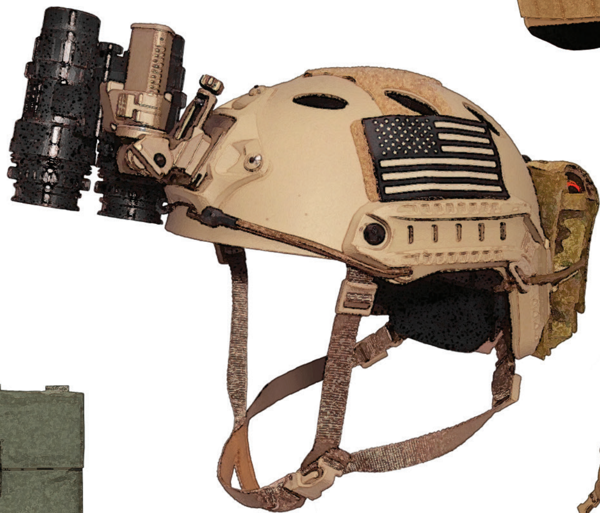
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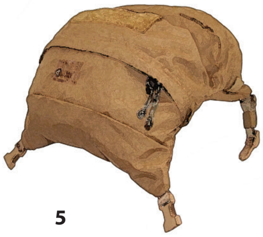
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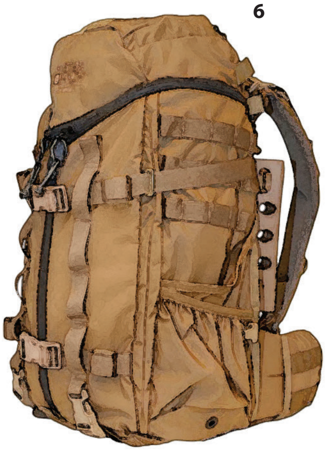
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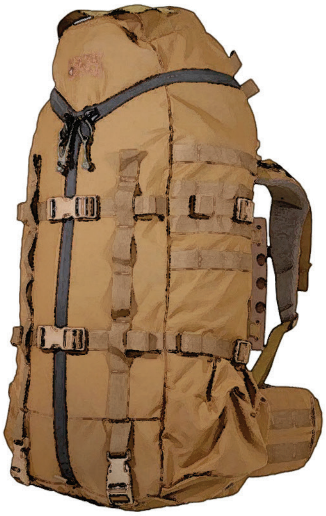

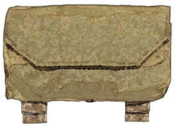
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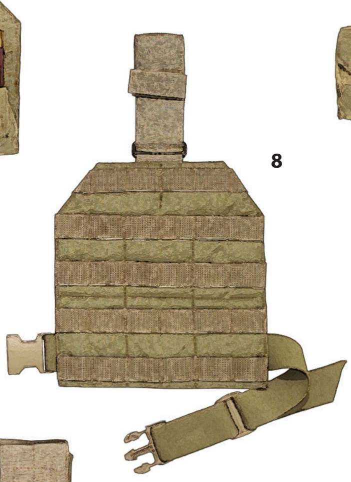
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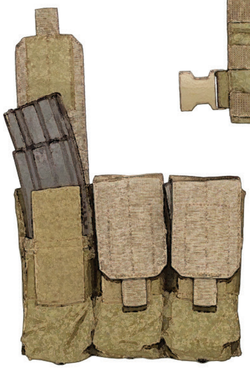
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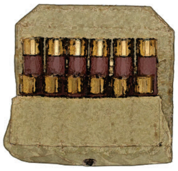
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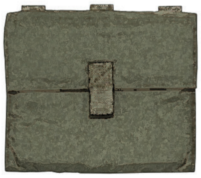
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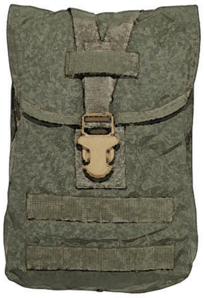
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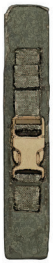
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Harris AN/PRC-150 High Frequency Manpack Radio (HFMR) in 2003. As part of the Falcon II program the HFMR includes embedded Type 1 encryption.

Tactical information systems

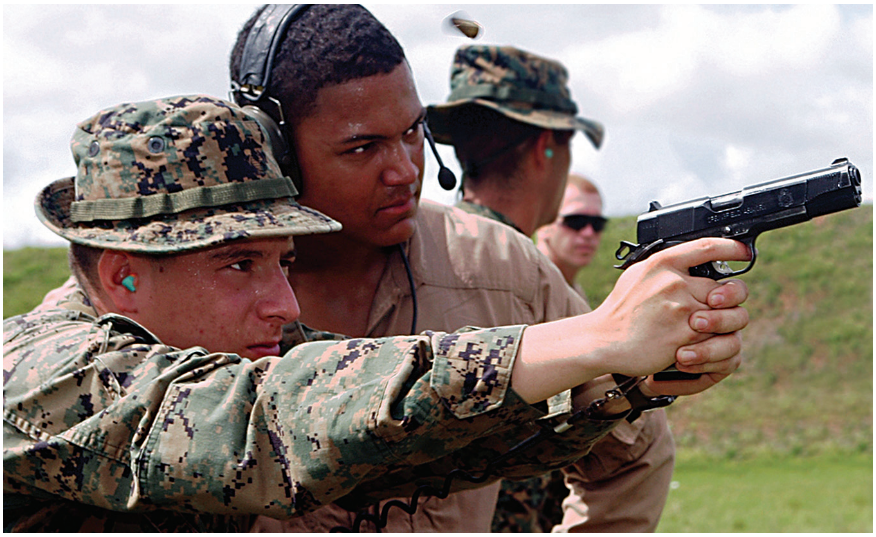
In recent years an effort has been made to take advantage of advances in networking technology and portable computing to disseminate information to troops in the field through laptops, tablets and smart phones, in order to increase their situational awareness and improve coordination. The Remote Video Viewing Terminal (RVVT) program provides video and other data to reconnaissance and MARSOC teams from a variety of sources, for forward air control and other uses. Current equipment includes the VideoScout MC/2 Remote Video Exploitation Terminal (RVET) fielded in 2009; the next version, MC/3, with Type 1 encryption, is beginning to appear in the field. The RVVT program is also responsible for fielding the SIR 2.5 video downlink system, a more portable version of the older Remotely Operated Video Enhanced Receiver (ROVER) system used for JTAC air-ground coordination. An even newer advance is the Target Hand-Off System (THS) for Forward Air Controllers, JTAC and forward observers. In recent years, an increasing number of these information dissemination systems have shown up in the field on Panasonic Toughbooks, General Dynamics GoBooks and Samsung tablets.

SMALL ARMS & LIGHT SUPPORT WEAPONS

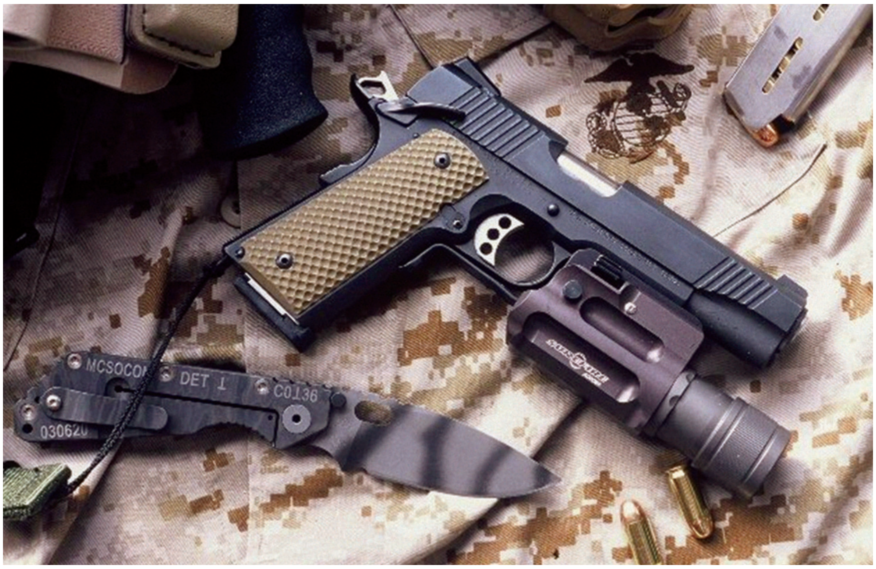
The standard infantry rifle is largely absent from the table of equipment for reconnaissance and special-operations units, since their missions often favor more compact weapons such as the carbine and pistol. Reconnaissance Marines are provided their weapons through USMC channels, as are the critical skills operators of MARSOC, but the latter also have access to additional specialized weapons through their affiliation with SOCOM.

Fighting knives

As an important backup weapon, the use of knives is routinely taught during CQB training. Traditionally, Force Recon have relied on issue knives such as



August 2006: a Force Recon Marine is coached in the use of his M45 MEU(SOC) pistol, the standard Force Recon sidearm for some 20 years from 1985 until the recent introduction of the Colt M45A1. The M45 was built to exacting standards by the USMC Rifle Team Equipment shop at Quantico, using a variety of commercial parts hand-fitted to government M1911A1 frames, and it is said that no two were exactly the same. It was originally designated the MAU(SOC) .45, until the Marine Amphibious Units were renamed Marine Expeditionary Units in 1988. (Lance Cpl Kamran Sadaghiani/USMC)



During its brief existence the test unit MARSOC Detachment One fielded several unique weapons, among them this Kimber ICQB pistol and a custom folding knife by Strider. (LtCol John Piedmont/USMC)

the Mk 2 KA-BAR and the Mk 3 Mod 0 dive knife, along with personally-purchased knives from a number of makers, with, occasionally, third-party sheaths from makers such as Spec-Ops or Eagle. Detachment One commissioned a folding knife from Strider following its activation – the first unit-specific knife to be issued to Marines since the Camillus USMC Stiletto used by Marine Raiders of World War II. The incentive for private purchases has since been reduced by MIAK issues of models such as the Benchmade Nimravus and Griptilian.

Pistols

The pistol most closely identified with Force Recon is the MEU(SOC) .45, now called the M45 MEU(SOC). Based on the .45 cal M1911A1 pistol, the M45 was born of Force Recon's CQB mission requirement as part of the new Marine Amphibious Units in 1985. At this time the US armed services had officially adopted the 9mm Beretta M9 pistol in place of the venerable M1911A1, but, while recognizing the latter's weaknesses, Force Recon personnel were skeptical of the M9's suitability for close combat. Following the experience of Army Special Forces, it was decided to task the USMC Rifle Team Equipment shop at Quantico with mating M1911A1 frames held in inventory with commercially-acquired parts to hand-assemble new pistols to near-National Match standards. On its debut in 1985 the customized pistol was called the MAU(SOC), in reference to the Marine Amphibious Units; when they were renamed Marine Expeditionary Units in 1988 it became the MEU(SOC) .45, and it eventually acquired a model number to become the M45 MEUSOC. In 2002 the RTE shop, overstretched by demand for sniper rifles, determined that it could not supply and maintain these pistols indefinitely, though it continued to do so for some years.

Discussion of a more easily produced and maintained sidearm was ongoing. With the formation of SOCOM Detachment One in 2003, its commander Col Robert Coates was authorized to purchase a modified Kimber Classic Custom .45, which had the advantage of an integrated Military Standard 1913 rail used to mount a Surefire weapon light. The Kimber was variously termed the Interim Close Quarters Battle Pistol or

MCSOCCOM Pistol. Not until 2012 did the Marines find a true replacement for the M45 MEUSOC. This new sidearm, made by Colt Defense and called the M45A1 Close Quarter Battle Pistol (CQBP), included a weapon-light rail and embodied a number of additional improvements. The CQBP is visually distinctive, with a desert tan Cerakote ceramic finish and colorfully striated G10 glass-reinforced epoxy laminate grips. Its mass production ensures its availability to a much broader range of personnel; it is currently the standard sidearm of all reconnaissance units, MARSOC and Special Reaction Teams.

The USMC recon battalions, having less emphasis on CQB than Force Recon, used M9 Berettas until the advent of the M45A1. MARSOC also issues the Beretta alongside the M45A1; its critical skills operators have also used the Glock 19 unofficially, and officially starting in 2015. The prevalence of non-metallic parts in this very reliable weapon is an advantage in the maritime environment in which MARSOC CSOs often work. A final handgun in the Force Recon armory is the venerable .22cal High Standard HDM suppressed pistol, though this is something of a curiosity today.

Carbines and rifles

Force Recon Marines in the 1980s and ‘90s patrolled with the infantry’s standard M16A2 rifle, but for direct-action missions the 9mm MP5 submachine gun and CAR-15 Commando carbine were the primary weapons; their compactness made them more suitable than the rifle for use in the tight confines of buildings and ships. However, with the improvement and more widespread use of body armor a more powerful weapon than the MP5 was sought for direct-action missions. Following SOCOM’s 1994 choice, in 1998 Force Recon

adopted the 5.56mm M4A1 carbine, with a 14.5in barrel and capable of fully-automatic fire. Designated the M4A1 Close Quarter Battle Weapon, it was also issued within a few years to battalion reconnaissance and other selected units.

The M4A1 fielded by SOCOM was issued with a group of specialized accessories – optical sights, target illuminators, Mil-Std-1913 rail, sound suppressor, etc. – through the Special Operations-Peculiar Modification (SOPMOD) program administered by the Naval Surface Warfare Center, Crane Division. Not being a component of SOCOM, Force Recon did not receive the SOPMOD kit for their carbines, but they acquired selected components from Crane, resulting in an M4A1 very similar to that used by SOCOM and referred to by Force Recon as SOPMOD carbines. This powerful, handy weapon effectively replaced both the MP5 and M16A2 in the Force Recon companies for daily operations. Detachment One, created from Force Recon personnel, also used an M4A1 with many SOPMOD features. When MARSOC was created as a component of SOCOM in 2006 it received M4A1 carbines with the SOPMOD kit, then transitioning from Block I to an updated Block II configuration. An even shorter M16 variant in use is the ultra-compact Mk 18 Mod 0 with a 10.3in barrel, designed specifically for close combat.

SOCOM has developed an additional carbine and rifle series intended as a replacement for the M4A1. This Special Operation Forces Combat Assault Rifle (SCAR) was produced in both 5.56x45 mm NATO (since dropped by SOCOM) and 7.62x51 mm NATO, with barrels in three lengths. The SCAR has demonstrated high reliability in the challenging conditions of Iraq and Afghanistan, where it was first employed in 2009. MARSOC fields the 7.62x51mm NATO Mk 17 SCAR-H ("heavy") variant, with SOPMOD accessories, alongside its M4A1 and Mk 18 carbines.

Small arms accessories

In the past 20 years or so the tactical flexibility of infantry weapons has been transformed by innovative target-acquisition devices and improved ergonomics, many developed in the commercial sector. In any modern photograph of SOF a range of day and night sights, laser illuminators, weapon lights and aftermarket furniture are immediately obvious, attached to the multiple Mil-Std-1913 rail system (aka Picatinny rails, in acknowledgement of their development at Picatinny Arsenal). Such enhancements were first embraced in the USMC by the Force Recon companies when they received the M4A1 carbine in 1998. As noted above, Force Recon selected a number of SOPMOD components for their carbines, along with a number of unique add-ons from the commercial marketplace.

A number of new sights were acquired, including electro-optical reflex sights and a new telescopic sight. The reflex or "red dot" sight offers enormous advantages over traditional "iron" sights, in rapid target acquisition and adaptability to different light conditions. For close battle the Force Recon companies initially purchased Trijicon RX01NSN reflex sights, identical to those fielded in SOCOM through SOPMOD Block I, but these were soon replaced with the superior Aimpoint CompM ML XD. For longer-range encounters the Block I SOPMOD kit included the Trijicon TA01NSN Advanced Combat Optical Gunsight (ACOG) Day Optical Scope, a 4x32 telescopic sight for use at ranges up to 600 meters. Highly successful, the ACOG has since fathered the TA31F also used by Force Recon, and the AN/PVQ-31 Rifle Combat Optic used throughout the Corps.

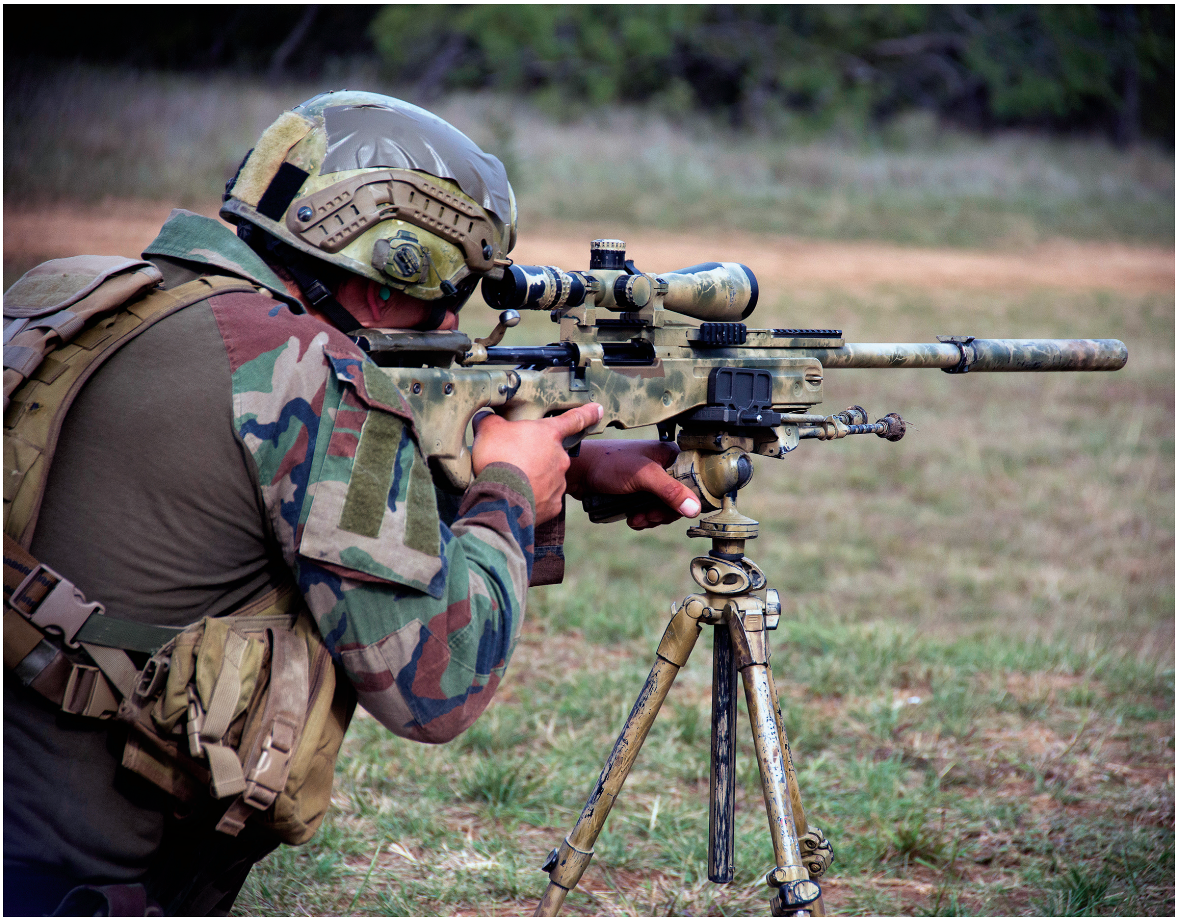
OPPOSITE
March 2013: a bearded MARSOC operator sights along his Block II Mk 18 Mod 0 carbine while providing security in Helmand Province. The weapon has a Magpul CTR stock, and a Daniel Defense RIS II free-floating rail assembly, with a Tango Down QD "stubby" vertical foregrip. It mounts (left to right) an Eotech 3x magnifier and Eotech SU-231/PEQ reflex sight; an Insight AN/PEQ-15 laser target illuminator; on the near side, a Surefire Scout Light; and a Knight's Armament quick-detach suppressor.
The standard aluminum 5.56mm 30-round magazine, which has seen successive improvements, is still the mainstay, but other types have also been used; for example, Detachment One purchased a number of heavy but durable Heckler & Koch steel magazines in 2003. That shown here is a PMAG Gen II MOE by Magpul, with a round-counting window; in 2007 the first model of the reliable polymer PMAG gained wide popularity, and a third version is in use today. Although the use of ultra-high capacity magazines is controversial due to their notorious feed problems, MARSOC has also experimented with the 60-round Surefire MAG5-60 in Afghanistan. (Sgt Pete Thibodeau/USMC)

The AN/PVS-17A Miniature Night Sight (MNS) and AN/PAS-13 series thermal sight were issued for nighttime use, and have evolved into smaller devices; newer models in the Marine inventory include the AN/PVS-24A Individual Weapon Night Sight I^2 (IWNS-I^2) image intensifier, SU-232/PAS Clip-on Night Vision Device-Thermal (CNVD-T), and AN/PAS-27 Individual Weapon Night Sight-Thermal (IWNS-T). All of these can be used without the removal of zeroed-in day optics. Backup sights include flip-up aperture sights by Knight's Armament, in both adjustable (to 600m) and 300m fixed versions; these can be fitted on the upper receiver in addition to electro-optical sights. Target acquisition was improved by the AN/PEQ-2 series Infrared Target Pointer/Illuminator/Aiming Laser (ITPIAL) used in conjunction with a night-vision device, and the Visible Light Illuminator (VLI), which emitted a strong white beam for close-quarter target identification. The latter has since been replaced with the Surefire M962, usually called the VLI Replacement (VLIR). The similar but more compact Surefire H-310R and H-610R were used with the MEU(SOC) .45 pistol. All these types of accessories proved very effective, and recent years have seen increasing miniaturization and durability of sighting devices and additional options in ergonomics. Space forbids a complete listing, but mention may be made of Eotech 3x magnifier sights such as the G33, which extend the useful range and can be quickly flipped out of the way for close combat.

Direct modifications to the carbine itself included the Knight's M4 RIS handguard, supplied with rail covers and a detachable "broomstick" handle (which proved invaluable as the rail system filled up with sights, illuminators, etc.); a Badger tactical charging-handle latch, Norgon ambidextrous magazine catch, and Knight's Armament "chipped" flash hider designed to engage a Knight's quick-detach suppressor. Later, a DPMS ambidextrous fire selector was added. One obvious difference of SOPMOD carbines was the Sloping Cheekweld Buttstock (SCB), informally known as the Crane stock, and commercial stocks by Magpul Industries and other companies have seen extensive use by both the Force Recon companies and MARSOC. Detachment One outfitted their M4A1s with Magpul M93 stocks and Magpul ergonomic pistol grips, and the Surefire M900 combination vertical foregrip/weapon light. Other custom buttstocks and vertical foregrips became commonplace, such as the Magpul CTR and ACS and the VLTOR Modstock.

Sniper and marksman rifles

The current version of the medium-range bolt-action M40 rifle, the mainstay of Marine scout snipers since the late 1960s, is the M40A5. At the time of writing an M40A6 upgrade involves adoption of a modified Remington Arms Chassis System, with folding stock and extensive accessory rails. For closer-range work the M40 has been joined by, in succession, the Designated Marksman Rifle (DMR) and M39 Enhanced Marksman Rifle (EMR), both derived from the M14. Intended for designated marksmen within rifle squads, they are also used by recon and special-ops personnel. The current version of the Knight's Armament SR-25, derived from the AR-10 and known to the US Army as the M110, is designated in Navy/USMC nomenclature the Mk 11 Mod 2, and has replaced most of the Corps' M14-derived weapons. These rifles are all chambered for 7.62x51mm NATO; marksman rifles derived from the M16 and chambering the 5.56x45mm round include the Squad Advanced Marksman Rifle (SAM-R), and the SOCOM Mk 12 Special Purpose Rifle (SPR) chosen by the Marine Corps as its replacement.



A Marine from MARSOC lines up an unloaded Mk 13 Mod 5 rifle while attending an advanced sniper course. The highly accurate Mk 13 is based on the Remington 700 action but chambered for .300 Winchester Magnum ammunition, and is reportedly effective out to 1,300 meters. (Catherine DeRan/MARSOC)

These are all antipersonnel weapons; for antimatériel purposes the Corps has fielded the .50cal Barrett M82A3 Special Application Scoped Rifle (SASR), and a lighter version, the M107 SASR, made its appearance in 2007. The SASR has an effective range of more than a mile, but its relatively modest precision (for a sniper weapon) makes it more suitable for such targets as vehicles than personnel; achieving a hit on a mansize target at even 1,000m is not guaranteed.

Existing Marine antipersonnel sniper rifles are limited in range by the limitations of the 7.62x51mm NATO cartridge. Taliban fighters in Afghanistan were quick to exploit this handicap, routinely positioning machine gun and mortar ambushes beyond range of an effective USMC sniper response. Longer-range rifles have been evaluated, with a suite of innovative support equipment including handheld ballistics computers, but none have been adopted, partly due to a reluctance to provide logistical support for an additional caliber of ammunition. The Corps evidently plans to address this range gap someday – specifications for the new M40A6 provide for a future receiver chambered for .338 Lapua Magnum, as used by British snipers – but as yet the clamor from Marine scout snipers goes unanswered.

MARSOC Marines do have an additional option: the SOCOM Mk 13 sniper rifle, a bolt-action weapon chambered for .300 Winchester Magnum and reported to have an effective range over 1,300 meters. The current Mk 13 Mod 5 issued to MARSOC is being replaced with the Mod 7 with a folding stock and improved suppressor. At present, Remington Arms is working under a SOCOM contract to produce a new weapon able to reach out to 1,500m-plus; specifications for this Mk 21 Precision Sniper Rifle (PSR) provide for the use of multiple types of ammunition, including .300 Win Mag, .338 Lapua and 7.62mm.

The principal USMC sniper telescopic sights in recent years have been the 3-12x50 variable power M8541 Schmidt & Bender Scout Sniper Day Scope (SSDS), the AN/PVS-27 Scout Sniper Mid-Range Night Sight (SSMRNS), and the Scout Sniper Urban Night Sight (SSUNS). MARSOC snipers have used a number of others, particularly models from Horus Vision and Leupold. The USMC recently selected a new Scout Sniper Ballistic Computer (SSBC), the handheld Kestrel 4500 meteorological Personal Digital Assistant (PDA) with added ballistics computation capability.

Shotguns

Reconnaissance and special-ops Marines use standard USMC shotguns in conjunction with specialized shells for breaching operations. Prior to the introduction of the semiautomatic Benelli M1014 Joint Service Combat Shotgun in 2000–01, Force Recon used an assortment of venerable pump-action shotguns shortened by replacing the stock with a pistol grip and substituting 15in or 16in barrels; a Surefire weapon light forend was sometimes mounted as well. The new M1014 has an adjustable stock and is somewhat more compact than the older shotguns, and is regularly used in close-combat missions.

Hand grenades and grenade launchers

Reconnaissance and special-ops Marines carry the full gamut of standard fragmentation, concussion and incendiary hand grenades, but they are particularly associated with the “stun” or “flashbang” grenade intended to disorient an enemy in close-quarter battle. The US Navy Mk 141 Mod 0 and Army M84 are those most typically used.

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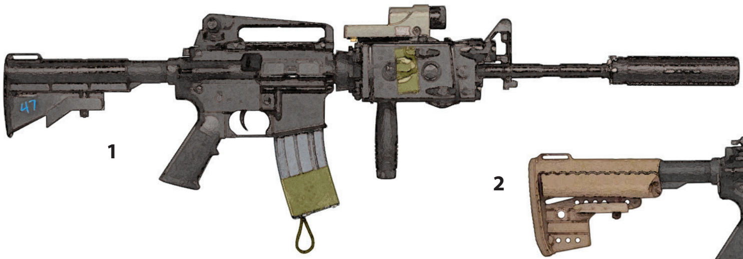
SMALL ARMS & LIGHT SUPPORT WEAPONS

The M4A1 carbine has been the workhorse of recon and special operations since its adoption by the USMC in 1998. Here, an early Force Recon M4A1 configured for close combat, *c.* 2000 **(1)** is compared with a SOPMOD Block II M4A1 used a decade later by MARSOC **(2)**. The earlier carbine, mounting an RX101NSN reflex sight and AN/PEQ-2A laser target designator, is characterized by older, bulky electronics and limited rail space, while the later weapon benefits from the technological and ergonomic advances of the past decade. It mounts an SU-230/PVS sight, plus AN/PEQ-15 designator and M3X weapon light on a free-float rail, and has been customized with a Magpul foregrip and VLTOR stock. The earlier carbine has a standard aluminum magazine customized for better grip with tape and a paracord pull-loop; the later weapon has a PMAG polyester magazine fitted with a commercial Magpul. Both carbines are fitted with Knight’s M4 QD suppressors. The short-barreled Mk 18 Mod 0 **(3)** is particularly suited to close combat; this typical MARSOC configuration has an Eotech M552 Holographic Diffraction Sight, Matech backup sight, AN/PEQ-15 designator, and Surefire M900 vertical foregrip/weapon light. Originally a Close Quarter Battle Receiver was built to a SOCOM specification for a short-barreled upper receiver and associated parts that could quickly be swapped onto an M4A1 lower receiver for specific missions, but since 2005 the Mk 18 Mod 0 has been issued as a complete weapon. The M203 QD 40mm grenade launcher **(4)** can be fitted to any M16 or M4, but not to the Mk 18.

The Force Recon M45 MEU(SOC) pistol **(5)** is fitted with a Surefire 610R weapon light. Its successors are the M45A1 Close Quarter Battle Pistol **(6)**, and the Glock 19 in use by MARSOC **(7)**. The .22cal High Standard HDM silenced pistol **(8)**, a relic of the World War II OSS, was also acquired in former years by Force Recon.

SOCOM weapons available to MARSOC include the Mk 48 Mod 1 SAW support weapon **(9)**; Mk 13 Mod 7 sniper rifle **(10)**, shown with a Horus Vision Falcon 5-20x50 telescopic sight; Mk 21 Precision Sniper Rifle **(11)** – just entering production at the time of writing – with an SSDS scope; 84mm Carl Gustav M3 MAAWS (Multi-role Anti-armor Anti-tank Weapon System) recoilless rifle **(12)**; and the Mk 17 SCAR-H **(13)**, which also accommodates the 40mm Mk 13 Enhanced Grenade Launcher Module **(14)**.



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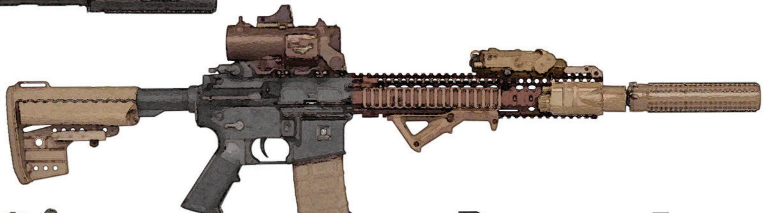

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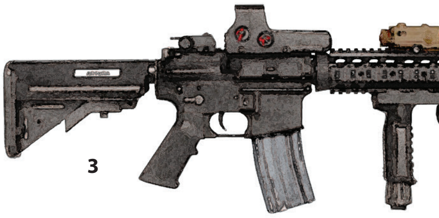

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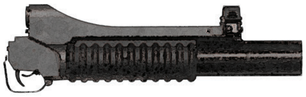

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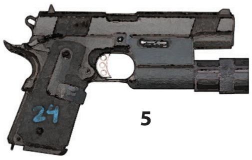

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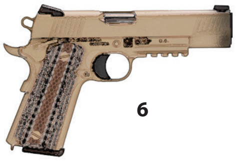

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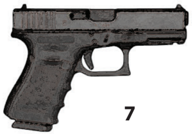

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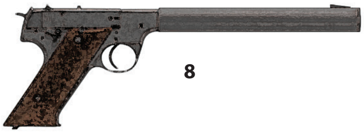

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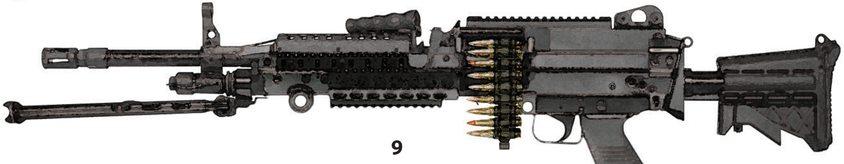

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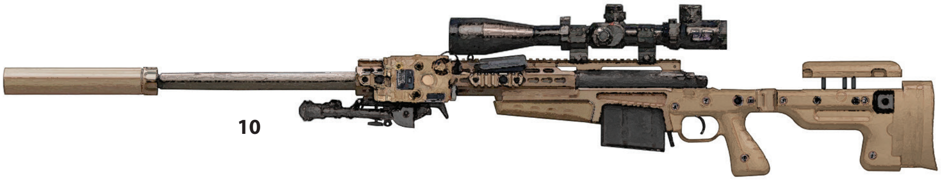

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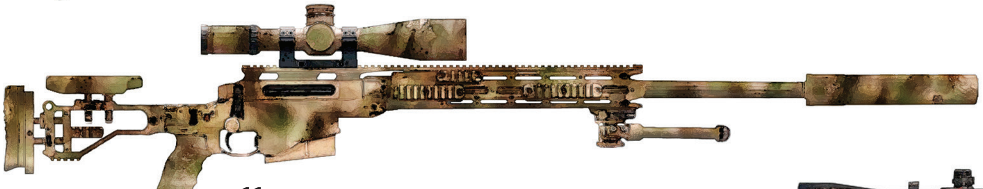

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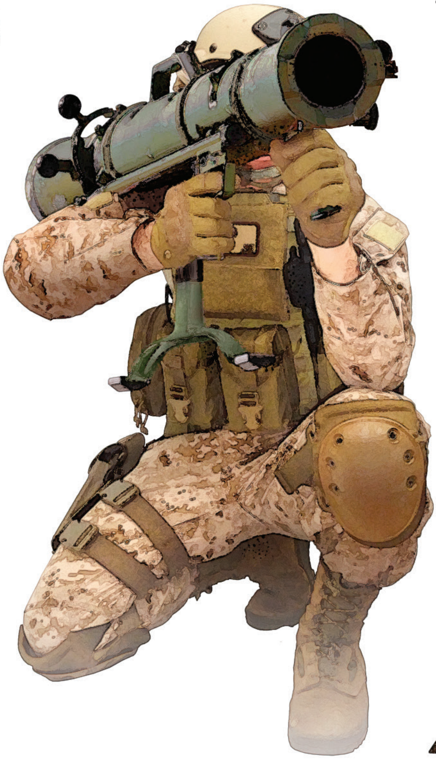

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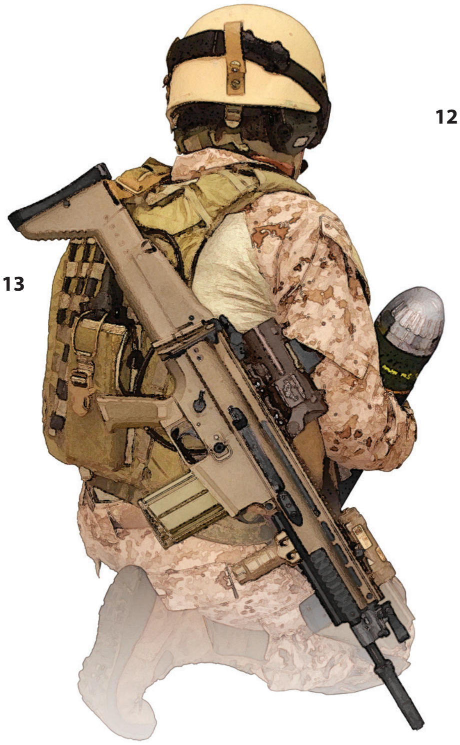

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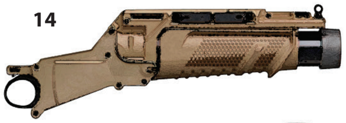

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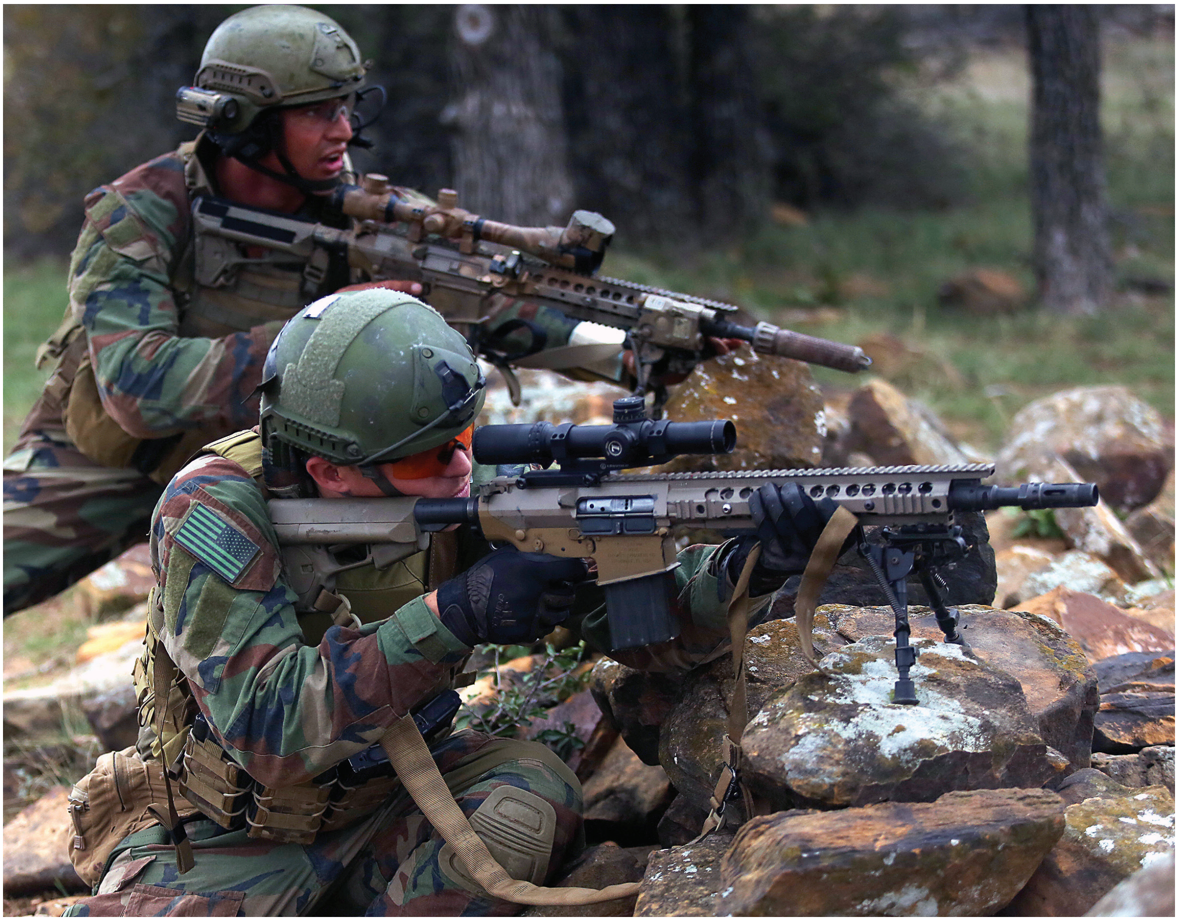


MARSOC Marines fire Mk 11 Mod 2 (aka M110) carbines during an October 2013 advanced sniper course. These carbines originated as standard sniper rifles, converted with M110 K1 carbine kits purchased by MARSOC from the manufacturer, Knight's Armament (the US Army did the same). This compact precision weapon is well suited to urban sniping and for use in the cramped confines of vehicles. The carbine in the foreground is equipped with a 1.1-8x24 Leupold Mk 8 Close Quarters Battle Sniper Scope, while that in the background mounts a 5-20x50 Falcon scope from Horus Vision. Both of these unit-purchased scopes are modern variable power designs featuring advanced reticle options. (Vance Jacobs/ MARSOC)

The M203 underbarrel-mounted 40mm grenade launcher is commonly used in conjunction with the M4A1 carbine; in addition to the standard 12in barrel a 9in-barreled version features in the SOPMOD package available to MARSOC. The current A2 version used by the USMC features a 12in barrel and quick-release barrel mount. The M203 is not compatible with the SCAR, for which the Mk 13 Enhanced Grenade Launcher Module (EGLM) was developed; this differs from the M203 in that the barrel opens by pivoting to right or left, allowing a wider potential range of grenade lengths. As well as being mounted to the SCAR, it can also be attached to a proprietary stock for standalone use. The M32 series Multi-Shot Grenade Launcher (MSGL), adopted in 2010, fires 40mm grenades from a 6-cartridge rotary magazine. Finally, the USMC keep a number of the near-antique M79; its 350m range and accuracy actually surpass its modern replacements, and special-ops personnel sometimes take it along on missions as a secondary weapon.

All Marine infantry also have access to the M18A1 Claymore directional antipersonnel mine for perimeter defense and ambushes.

Light support weapons

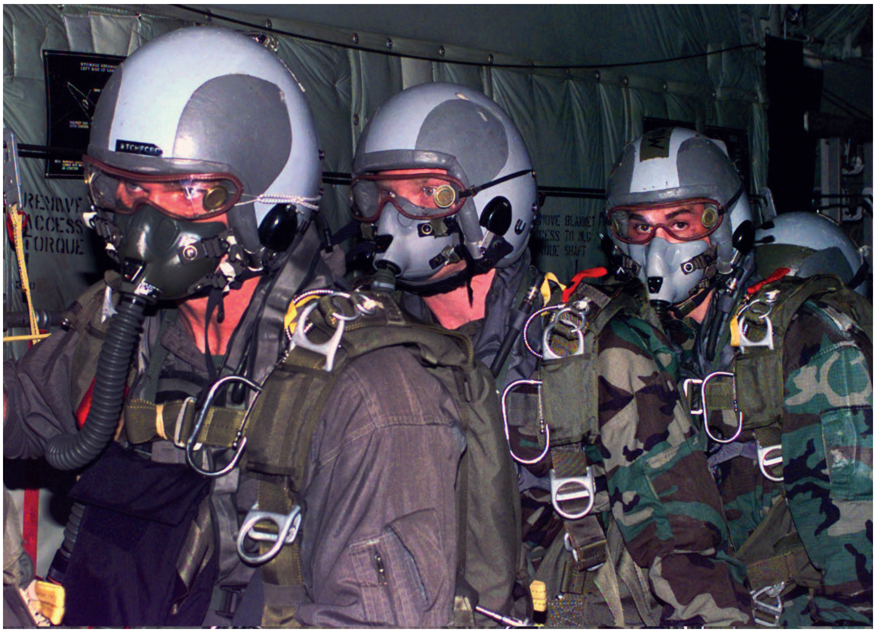
At the start of the 21st century recon Marines were using the FN 5.56 mm M249 Squad Automatic Weapon (SAW). Its 22lb loaded weight was a liability for deep recon missions, and its 18in barrel had to be removed for parachute jumps. The 1st Force Recon Co purchased manufacturers' conversion kits for the jump-friendly M249 Para configuration, with a 16.3in barrel and a collapsible stock, and also replaced the top cover with an updated version featuring a rail for mounting optics. While still heavier than the M249 SPR in use by SOCOM, the reconfigured weapons were acceptable, and the M249 Para was also used by Detachment One. More recent improvements include railed handguards and stronger bipods, and additional special-ops models have emerged. These include the Mk 46, a successor to the SPR, and also a 7.62mm derivative classified as the Mk 48; the Mk 48 Mod 1 light machine gun is currently in use with MARSOC.

In 2010, the USMC adopted the magazine-fed M27 Infantry Automatic Rifle (IAR), a more portable support weapon based on the M16; this has replaced the M249 at squad level, and is now extensively used by recon Marines and MARSOC.

The improved M72 and M136 shoulder-fired rocket launchers are available with a number of warheads designed for soft and armored targets. MARSOC also has at its disposal the 84 mm M3 MAAWS recoilless rifle – aka the Carl Gustav. This current version of a Swedish-derived weapon that has been in use by US SOF since the 1980s has seen extensive use by MARSOC in Afghanistan, where its lightness and portability make it an extremely useful form of "personal artillery".

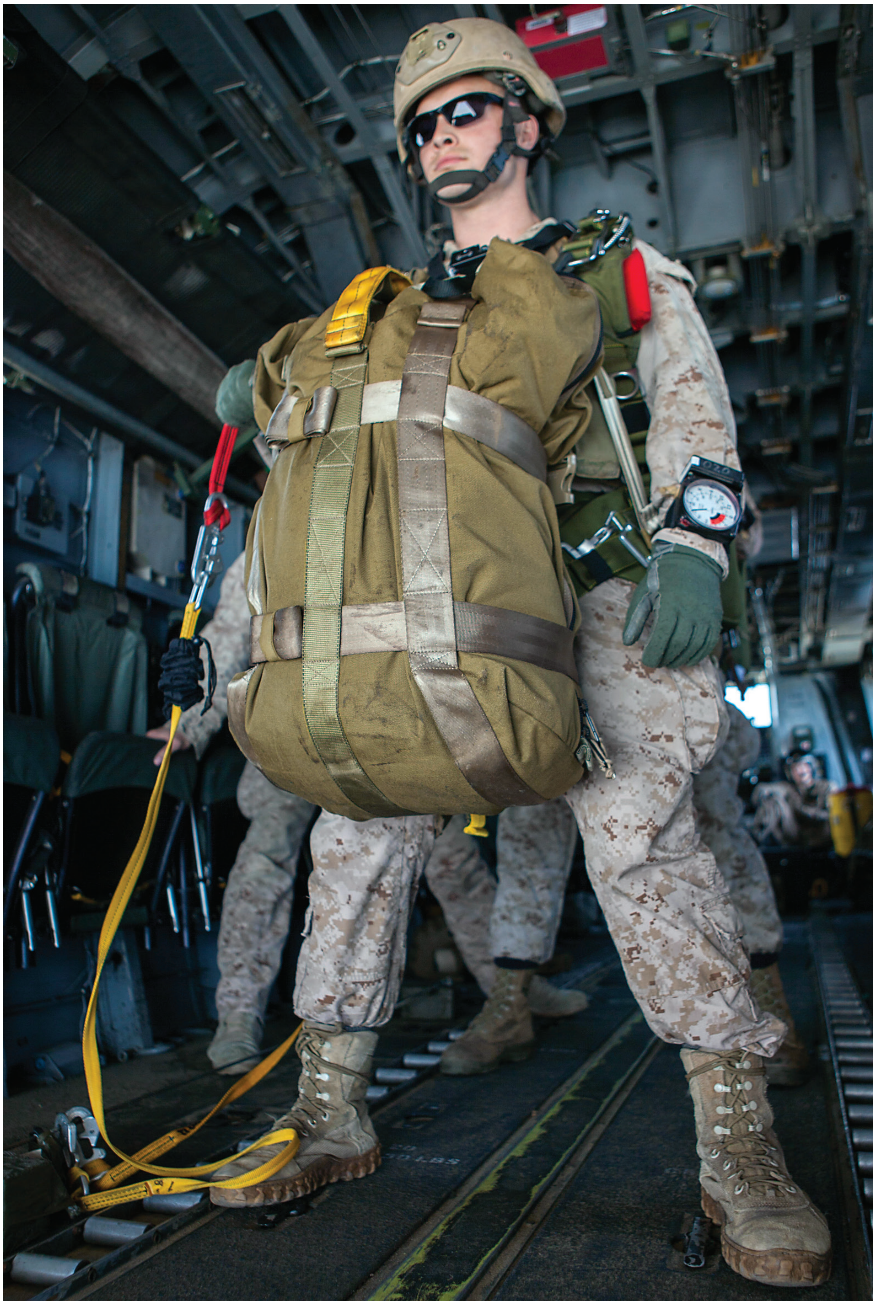
INSERTION & EXTRACTION

As one Force Recon NCO has observed: "CQB and patrol gear are what we wear at work; insertion and extraction gear are what we wear on the commute." Deep reconnaissance and special-operations missions often require specialized transport, and a number of airborne and waterborne methods have been developed to a high degree of perfection. These include parachuting, rope suspension techniques, swimming/diving, and direct vehicular delivery by aircraft, boat or submersible. Much of the equipment developed to support these techniques originated in the RPIE and URC operational requirements documents of the 1990s.



November 1999: Force Recon Marines lined up in a C-130 for a high-altitude jump, outfitted with HGU-55/P helmets, Kroop's Boogie goggles, and MBU-12/P oxygen masks. The Marine at left keeps a GPS and navigational compass – standard for high-altitude jumps – in the black navigation board on his chest; the other two wear first-generation PIEK parachutist's jumpsuits. (Lance Cpl Aaron Landegent/USMC)

April 2013: a Marine parachutist stands in the doorway of a CH-53E helicopter for a static-line jump over Qatar. Especially prominent are the Parachutist Drop Bag for equipment, attached to the front of his harness, and the MA2-30 wrist altimeter. (Cpl Christopher Q. Stone/USMC)



Parachuting equipment

Parachute deployment is used when an aerial insertion is required beyond the range of helicopter transport, or when stealth is essential. Jumps may be by the static line method, in which the parachute is opened automatically, or in military free-fall (MFF). Static-line jumps are typically made between 500 and 2,000ft above sea level, and MFF usually between 15,000 and 35,000 feet. The latter are classified as high-altitude, high-opening (HAHO) or high-altitude, low-opening (HALO) descents. The benefits are stealth and surprise, as troops can glide far from the path of the transport aircraft, which itself may be nearly undetectable from casual ground observation.

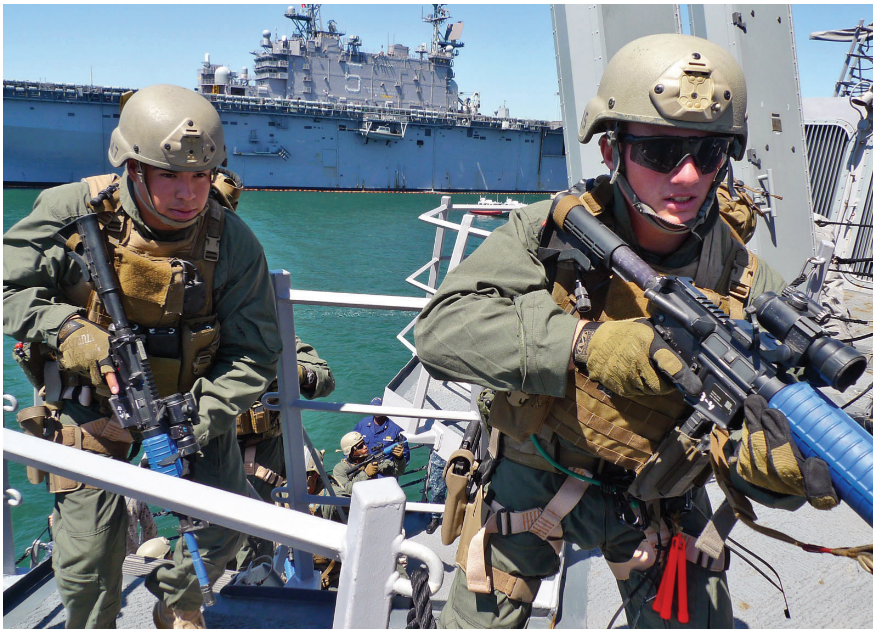
Reconnaissance Marines entered the 21st century with a number of parachute types at their disposal to fit these varied techniques, including the MC-5 Static Line/Free-Fall Ram Air Parachute System (MC-5 SL/FF RAPS) introduced in 1992. Largely specific to the USMC, this rig figured in a 2004 HAHO combat insertion in Iraq. Its replacement, the MMPS parafoil, can be configured for four types of static-line and free-fall deployments, eliminating the need for other parachutes. The MMPS accepts the Cybernetic Parachute Release System (CYPRES), an automated opening device that can be programmed for deployment at a specified altitude; standardized in 2004, this replaced the Automated Ripcord Release (AR2) device in use since the mid-1990s. In addition to personnel parachutes, a number of cargo-parachute systems have been developed, and have seen operational use in Iraq and Afghanistan.

Several harnesses to allow a parachutist to carry a rucksack and other equipment were adopted in this period, and in the mid-1990s the Canadian-designed Single Action Release Personal Equipment Lowering System (SARPELS) was introduced. This versatile system carries a rucksack or other equipment rolled into a bundle wrapped with the SARPELS fabric container and harness, and could be used on both static-line and free-fall jumps. Shortly after 2000, Eagle Industries introduced the simpler Parachutist's Drop Bag (PDB): everything could now be thrown into a bag, zipped up, cinched tight, and hooked up. The Force Recon companies quickly acquired the PDB, and the earlier harnesses fell out of favor.

For high-altitude operations in particular, Marines were provided in 1995 with support equipment in the form of the Parachutist's Individual Equipment Kit (PIEK), to standardize formerly locally-procured items. PIEK comprised warmly-lined wind-resistant jumpsuits, gloves, overboots, protective helmets, goggles, oxygen equipment for jumps above 14,000ft, and ancillary equipment including the MA2-30 wrist altimeter. Much of this gear has since been updated; PIEK was expanded considerably in 2004, MBITR radio interface and navigation boards for HAHO jumps being among the additions. Jumpsuits were replaced with early examples of the Protective Combat Uniform (PCU) recently developed for SOCOM. The PCU is an extremely versatile, compact and lightweight ensemble, made of modern synthetic materials and adaptable to a wide range of environmental conditions.

Rope Suspension Equipment

Marines are often transported by helicopter or tiltrotor, and debarkation is often complicated by terrain features or urban settings that prevent an actual landing. Four methods for inserting and extracting troops with a hovering helicopter are in use today: fast roping, rappelling, SPIE, and use of the "Jacob's ladder" or "pilot's ladder" – a flexible ladder used on ships since ancient times (and still used for boarding them in VBSS operations). Marines refer to these methods collectively as Helicopter Rope Suspension Techniques (HRST), and the equipment used to support them as Helicopter Rope Suspension Equipment (HRSE) – the names may change as the MV-22 Osprey tiltrotor replaces helicopters in USMC service. MARSOC Marines use a relatively new SOCOM system of equipment called the Fast Rope Insertion/Extraction System (FRIES), which combines fast-rope insertion with SPIE extraction. FRIES uses its own unique rope and harness, and has not been adopted by reconnaissance Marines. A final method of rapid aircraft debarkation, called helocasting, uses no special equipment – it involves simply jumping from a helicopter hovering over water, and swimming to shore.



Maritime Raid Force Marines from the 15th MEU board the USS *Dewey* during an exercise in April 2012. They wear Misty Mountain Milroc rappel seats from the revised MIAK kit, and MICH helmets fitted with the Norotos shroud for mounting night-vision goggles. Their M4A1 carbines are configured with blue Simunition training uppers. (Lance Cpl Timothy Childers/USMC)

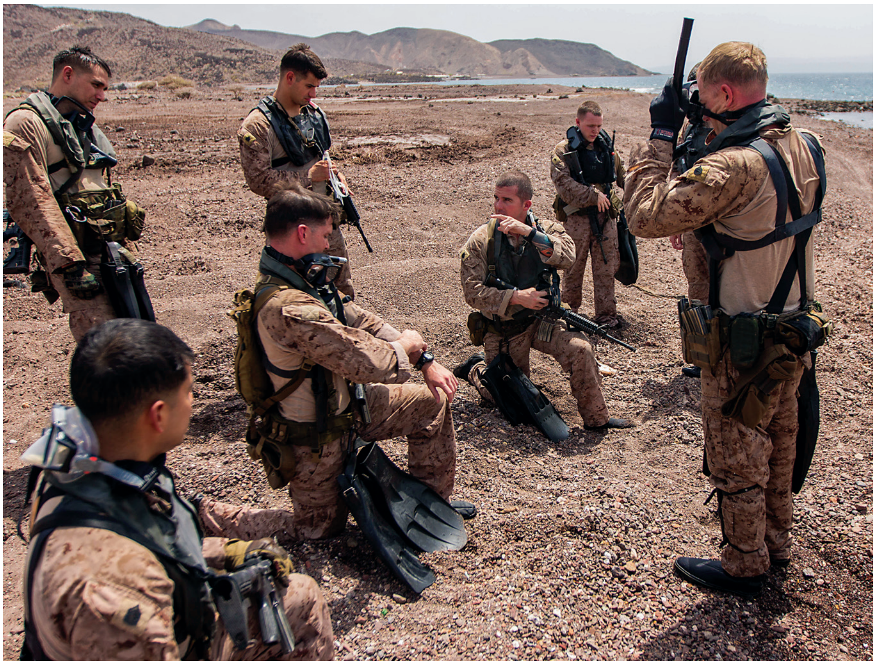
A separate Marine Assault Climber's Kit or MACK is not to be confused with the Interim FSBE vest with which it shares that acronym. It contains equipment used in rock and steep earth climbing, in counterpoint to the maritime and urban operation emphasis of the MIAK. It originated in the Assault Climber's Kit developed by Amphibious Raids & Reconnaissance in the 1980s–'90s, improved and rebranded as the MACK in 1996, and updated again in 2009. During the last upgrade issue priority was changed to Marine Expeditionary Force mountain leaders, and reconnaissance Marines no longer have free access to it. Many of the older kits are still in use with recon Marines, however, and MARSOC has access to the latest version.

Combat swimming and diving equipment

Military swimming and diving gear is often adopted "off the shelf" rather than developed to military specifications, but for the Marines these items were grouped into a series of kits in the early 1990s. In July 1990, Marine Corps Combat Development Center formulated a new requirement for a Scout Swimmer Set to support the recently augmented special-operations capability of the Marine Expeditionary Units.

Three interrelated kits were standardized in 1992: the Surface Swimmer Set, Diving Equipment Set, and Diving Dry Suit Set. The Surface Swimmer Set combined items to meet the basic needs of the MEU(SOC)'s scout swimmers: wet suit, diving belt, diver's boots, UDT flotation device, mask, snorkel, wrist magnetic compass, and the Mk 3 Mod 0 dive knife. The Diving Equipment Set contained items needed for open-circuit diving which would be combined with the Surface Swimmer Set as needed: a twin SCUBA tank assembly, regulator, depth gauge, diving belt, and a buoyancy compensator/flotation device. The Diving Dry Suit Set, for use in cold waters, consisted of the neoprene Viking Combat dry suit first used by Force Recon in the 1980s, with detachable gloves, and a small pressurization bottle to add air to the suit for buoyancy control.

Additional equipment for closed-circuit diving and protective garments were also issued individually, including the Underwater Breathing Apparatus



Several components of the Surface Swimmer Set dating from the early 1990s are worn by these Marines of the 26th MEU Maritime Raid Force, seen during training in August 2013. (Sgt Christopher Q. Stone/ USMC)

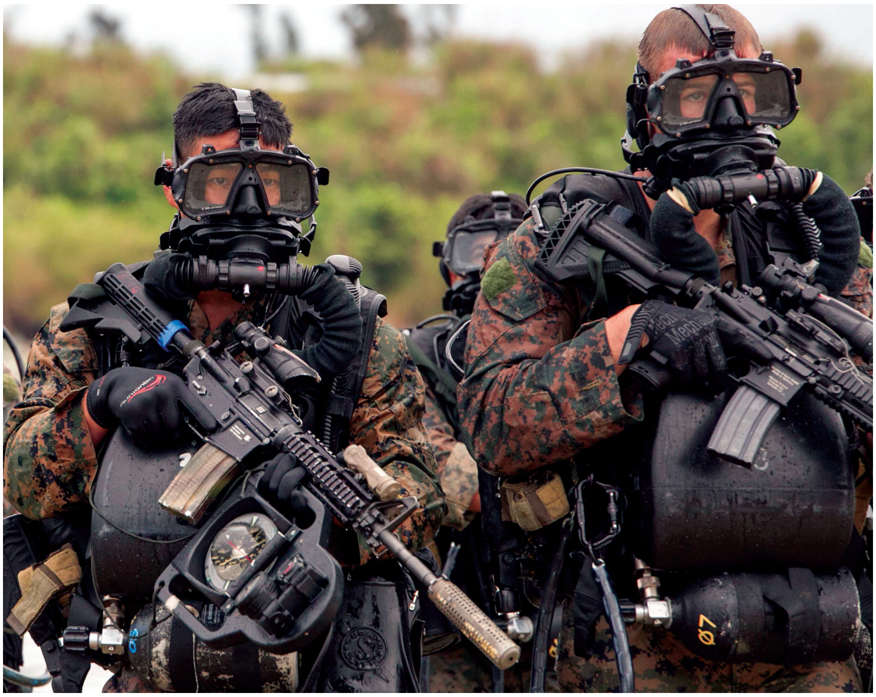
(UBA) – the Dräger LAR V system and Dräger Model 806 buoyancy compensator were already in use with Force Recon. Following the Underwater Reconnaissance Capability (URC) operational requirements document of 1996, the LAR V was designated the Mk 25 UBA and successively upgraded, and the Model 806 buoyancy compensator was soon replaced with the Secumar TSK 2/42. Other equipment in use included the Anti-Exposure Suit (AES) made of trilaminate nylon and butyl-rubber core, intended for shallow depths and wear in boats, and the Diver's Navigation Board, analogous to that used in HAHO parachuting.

Changes made since 2000 have been largely incremental, with some notable exceptions. A new Combatant Diver Dry Suit (CDDS), made of modern trilaminate composite materials, is now fielded, along with the Maritime Operations Suit (MOS) which replaced the AES. The Mk 25 UBA is still in use, but the TSK 2/42 buoyancy compensator was recently replaced by the Combatant Diver Vest (CDV), which combines air-bladder buoyancy with provision for jettisonable weights, and is covered in MOLLE PALS webbing for attachment of combat web equipment. The Surface Swimmer Set is no longer issued, as acquisition of individual components as needed was deemed more logistically efficient. Split fins have to a degree replaced the one-piece style; and older face masks have been replaced with the new Combatant Diver Full Face Mask (CDFFM), which, like parachutist's optics, is slated to receive a head-up navigational display in future.

Passenger safety and survival equipment

All Marines travelling by aircraft or small boat wear standardized passenger safety equipment, including, for overwater flights in rotary-wing aircraft, a personal flotation device, portable bottle of pressurized breathing air and a helmet. Along with Interim FSBE, rotary-wing aircraft passenger survival equipment and passenger safety training were mandated in the aftermath of the December 1999 helicopter crash discussed in an earlier chapter. The SRU-

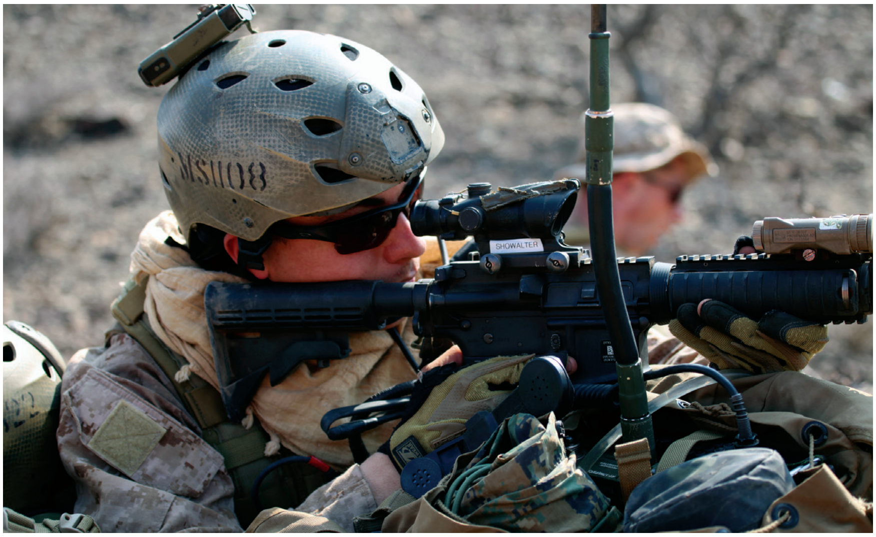
Men of the 3rd Recon Bn demonstrate closed-circuit dive equipment during beach reconnaissance training in April 2014. They wear the Mk 25 rebreather buckled over the front of the Combatant Diver Vest (CDV), and the Combatant Diver Full Face Mask; the Marine at left holds a Diver's Navigation Board. The CDV buoyancy compensation vest replaces the TSK 2/42 life preserver. (Cpl Matthew Manning/USMC)

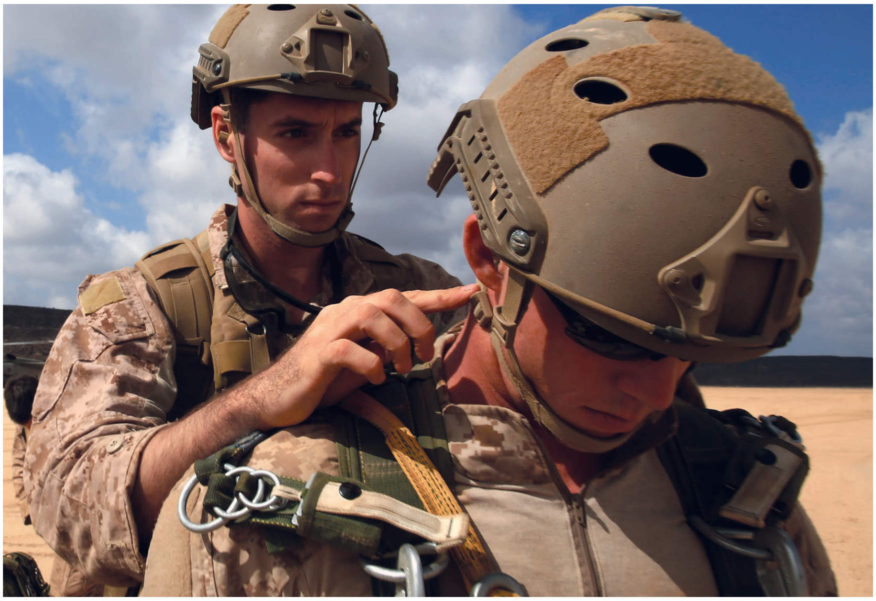


40B/P HABD air bottle was added to the LPU-32/P flotation device, and 9,000 units were procured for helicopter squadrons in 2001. The LPU-32/P was a twin-chamber inflatable flotation collar with 40lbs buoyancy – considerably less than the 65lb of the LPU-34/P being issued with the Interim FSBE kits; many questioned the decision to adopt the inferior device, even if on an interim basis.

Force Recon Marines opted to use their FSBE flotation collars whenever possible, particularly when fully kitted up for direct action. The LPU-32/P and IPHABD (Interim HBD) remained in service for only a few years: in 2006, Marine Corps Systems Command put out a request to industry for possible replacement designs that would integrate with the new quick-release

This Force Recon Marine wears a PT A-Bravo "bump" helmet with an attached strobe during a practice raid in Djibouti, December 2011. "Bump" helmets from any number of manufacturers are often worn in situations where the ballistic protection of a combat helmet is not essential. In the 1990s Force Recon used the Pro-Tec for low-level parachuting, HRST and rock-climbing operations, and boat exercises; it was also adapted for HAHO/HALO operations with the addition of the PIEK helmet liner. Bell motorcycle helmets were often worn for low-level static line operations in the 1990s and early 2000s. The Navy flight deck helmet – a cloth helmet with a segmented fiberglass carapace – is still occasionally worn during HRST operations; helmets by National Rafting Supply were worn on boats, and helmets by Joe Brown and, more recently, Petzl have been worn for climbing. The PT A-Bravo has recently come into widespread use in nearly all these capacities. (Cpl Ricky J. Holt/USMC)





The FAST Carbon, a non-ballistic helmet by Ops-Core, has become popular with reconnaissance Marines, and has been authorized for use in low-level parachuting, Helicopter Rope Suspension Techniques, and boats. The newer non-ballistic helmets feature mount points for rails and NVG brackets, so are handy when night vision goggles are needed. (Sgt Jennifer Pirante/USMC)

MTV and SPC body armor. The result, standardized in 2008, was the LPU-41/P Helicopter Egress System for Passengers (HESP), with buoyancy increased to 65lb – enough to support a Marine in full combat equipment – and an added sleeve for an SRU-43/P reserve air bottle. The HESP is now standard equipment, and is often used by MEU raid and reconnaissance assets. A number of other life preservers are also used in small raid boats.

* * *

Conclusion

Events set in motion by the creation of the MAU(SOC) in the mid-1980s exerted a profound effect on the design and acquisition of individual equipment over the following decades, with the result that today's reconnaissance and special-operations Marines are far better equipped than ever before. The rapid technological and design advances occurring within the last 20 years have touched off a revolution in equipage unlike anything in the Corps' long history.

Some critics have objected that finite resources have been allocated toward specialist equipment to the extent of producing an embarrassment of riches, and that a problem that the operational requirements documents of the 1990s were intended to resolve – broadly, that of uncoordinated and incoherent unit-level acquisition of specialist gear – may, in some sense, have been replicated. There may be some merit to this point of view, in that there has been some redundancy in acquisitions of non-standard gear. But this perspective misses the broader point: for the first time, Marine recon and special-ops troops have USMC institutional equipment that is designed for their specialist tasks, and they no longer need to improvise. They have a full complement of standard gear for every contingency; it works, and it has saved lives.

The pace of innovation will inevitably slow as designs and technologies mature, but there is no sign yet that this is happening, and despite a recent relative lull Marine Corps Systems Command appears poised to resume its pursuit of innovative equipment as long as the budget is able to support it.

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GLOSSARY OF ACRONYMS USED IN THIS TEXT

AAV: FSBE Amphibious Assault Vest

ABK: Assault Breacher Kit

AIRSAVE: Aircrew Integrated Recovery Survival Armor Vest & Equipment

ALICE: All-purpose Lightweight Individual Carrying Equipment

ANGLICO: Air Naval Gunfire Liaison Company

AVS: CQBE Assault Vest System; *also* Crye Adaptive Vest System

BALCS: Body Armor Load Carriage System (component of SPEAR)

CIRAS: Combat Integrated Releasable Armor System (*see* MAR-CIRAS, MS-CIRAS)

CPC: Crye Assault GEar (CAGE) Plate Carrier

CQB: close-quarter battle

CQBE: Close Quarters Battle Equipment

CQBP: M45A1 Close Quarter Battle Pistol

CQBPFD: LPU-34/P Close Quarters Battle Personal Floatation Device (*aka* LPFC)

CQBW: M4A1 Close Quarter Battle Weapon

CSO: critical skills operator (MARSOC)

E&E: evasion & escape

E&R: evasion & recovery

ELCS: Equipment Load Carrying System, a component of SPEAR

EOD: Explosive Ordnance Disposal

FAST: Fleet Antiterrorism Security Team

FLC: Fighting Load Carrier (component of MOLLE II)

FROG: Flame Resistant Organizational Gear

FSBE: Full Spectrum Battle Equipment (Generations I & II)

HABD: SRU-40/P series Helicopter Aircrew Breathing Device

HAHO: high-altitude, high-opening (parachute insertion technique)

HALO: high-altitude, low-opening (*see* HAHO)

HRST: Helicopter Rope Suspension Techniques

IAK: Individual Assault Kit

IAR: M27 Infantry Automatic Rifle

IFF: identification, friend or foe

IIFS: Integrated Individual Fighting System

ILBE: Improved Load-Bearing Equipment

ISTAR: intelligence, surveillance, target acquisition & reconnaissance

ITPIAL: AN/PEQ-2A Infrared Target Pointer/Illuminator/Aiming Laser

JPC: Jumpable Plate Carrier

LBE: load-bearing equipment

LBE/SPIE: Load Bearing Equipment/ Special Patrol Insertion & Extraction system

LV-MBAV: Low-Visibility Modular Body Armor Vest

LV-RBAV: Low-Visibility Releasable Body Armor Vest

LWH: Lightweight Helmet

MABK: Marine Assault Breacher Kit

MACK: Marine Assault Carrying Kit vest (Interim FSBE); *also* Marine Assault Climber's Kit

MAGTF: Marine Air-Ground Task Force

MAR-CIRAS: Maritime Combat Integrated Releasable Armor System

MARPAT: Marine Pattern camouflage

MARSOC: Marine Corps Special Operations Command

MAU(SOC): Marine Amphibious Unit (Special Operations Capable)

MBAV: Modular Body Armor Vest

MBITR: AN/PRC-148 Multiband Inter-/ Intra-Team Radio

MBSS: Maritime Ballistic Survival System

MCCUU: Marine Corps Combat Utility Uniform

MCLCS: Marine Corps Load Carriage System

MEU: Marine Expeditionary Unit

MEU(SOC): Marine Expeditionary Unit (Special Operations Capable); *also* M45 pistol

MIAK: Marine Individual Assault Kit

MICH: Modular Integrated Communications Helmet

MLCS: Maritime Load Carriage System

MMPS: Multi-Mission Parachute System

MRTB: AN/PAS-28 Medium Range Thermal Bi-ocular

MNS: AN/PVS-17 series Miniature Night Sight

MOLLE/MOLLE II: Modular Lightweight Load-Carrying Equipment, Gens I and II

MPPS: Multipurpose Poncho System

MRF: Maritime Raid Force (formerly MSPF)

MS-CIRAS: Land Combat Integrated Releasable Armor System

MSAP: Modular Supplemental Armor Protection

MTV: Modular Tactical Vest

NVG: night vision goggles

ORD: Operational Requirements Document

PALS: Pouch Attachment Ladder System

PASGT: Personnel Armor System, Ground Troops

PC: USMC Plate Carrier

PCU: Protective Combat Uniform

PDB: Parachutist's Drop Bag

PIEK: Parachutist's Individual Equipment Kit

RACK: Ranger Assault Carrying Kit, Recon Assault Carrying Kit vest (FSBE, Gen. I)

RBAV: Releasable Body Armor Vest

R-ILBE (RILBE): Reconnaissance ILBE pack system

RPIE: Reconnaissance, Patrolling, Insertion & Extraction Equipment

SAPI: Small Arms Protective Inserts

SARPELS: Single Action Release Personal Equipment Lowering System

SASS: Mk 11 Mod 2 (M110) Semi-Automatic Sniper System

SASR: M82 & M107 Special Application Scoped Rifle

SAW: M249 Squad Automatic Weapon

SEA: Survival Egress Air reserve air supply

SLS: Self-Locking System holster

SOCOM: US Special Operations Command (*aka* USSOCOM)

SOF: Special Operations Forces

SOFLAM: AN/PEQ-1A Special Operations Forces Laser Acquisition Marker

SOFLCS: Special Operations Forces Load Carriage Systems

SOPMOD: Special Operations-Peculiar Modifications (weapon accessories program)

SOTG: Special Operations Training Group

SPEAR: Special Operations Forces Personal Equipment Advanced Requirements

SPIE: Special Patrol Insertion/Extraction

SRT: Special Reaction Teams

TWPF: Team Water Purification Filter

UBA: Underwater Breathing Apparatus

UDT: Underwater Demolition Team

URC: Underwater Reconnaissance Capability equipment program

VLI: Visible Light Illuminator

VLIR: VLI Replacement

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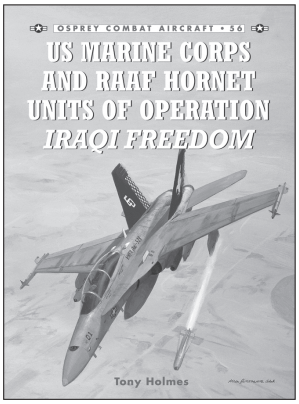
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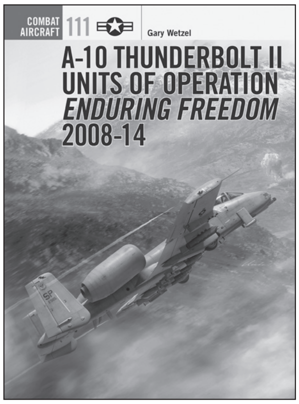
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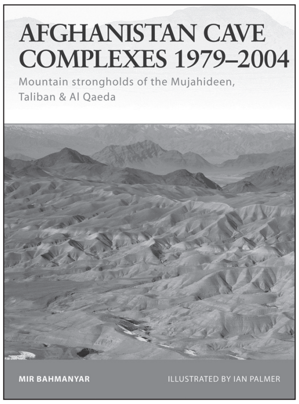
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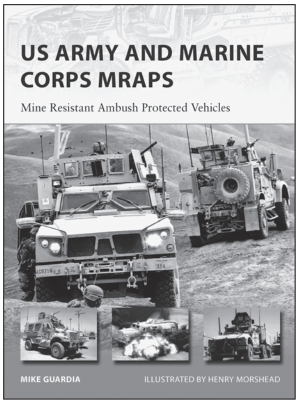
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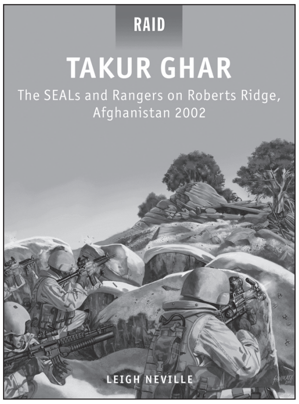
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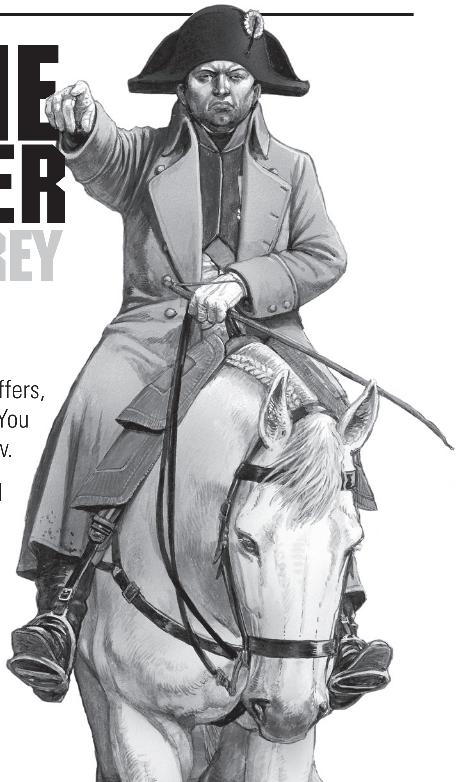

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